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ABSTRACT

This first semester, competency-based nursing course for an Associate degree nursing program is preceded by the final report of the project that developed it. An abstract, objectives, methodology, and findings are included. The course of study first provides a course description; course objectives; a content outline; a list of required instructional materials, supplies, and equipment; and a competency profile. The course consists of nine units, containing two to seven modules. Each unit begins with a list of the competencies covered. Components of each module may include some or all of the following: competency sheets with unit and module titles, competency, performance objectives, learning activities, evaluations, extended learning activities; quizzes; case studies; a bibliography list; a teacher's guide with teacher activities and teaching suggestions; and handouts. At the end of each unit, a pretest for review and a competency exam and answer key are provided. Topics covered in the nine units are basic concepts, gas transport problems, cardiovascular problems, endocrine dysfunction, problems of nutrition, urinary obstructions, neuro-muscular-skeletal problems, malignancy and sexual identity, and burn management. (YLB)

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FINAL REPORT

WOR-WIC TECH COMMUNITY COLLEGE
Nursing Curriculum Project FY 1981

by

Thomas D. Sepe
Local Plan Coordinator

Course of Study
Fall 1981

Wor-Wic Tech Community College
Salisbury, Md. 21801

1981

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Introduction

The Wor-Wic Tech Nursing Program is unique on the Eastern Shore because it is a regional program serving the eight (8) county area. It is the only two year nursing program leading to licensure as a Registered Nurse; it is the only program that has a ladder-type curriculum consisting of two, related one-year units. The first year of the program leads to certificate in Practical Nursing, the second year component builds on the first year and leads to an Associate in Arts degree.

Wor-Wic Tech Department of Nursing has a top priority to develop competency-based courses so that admission policies can be made broader to better accomodate students from secondary education, other nursing schools and work experience into the community college nursing program.

FINAL REPORT ABSTRACT

Project Title: Developing Model Competency-Based Vocational Education Course in Post-Secondary Institutions

RFP Activity Number: ; **FY** 1981 **Source of Funds**

Principal Investigator(s): Thomas D. Sepe, Dean; Mary E. Krum, Dept. Head; Patricia Waskey, & Mary A. Hensinger, Assistant Professors.

Organization: Wor-Wic Tech Community College

Address: 1202 Old Ocean City Road
Salisbury, Maryland 21801

Telephone Number: 301 (area code) 749-8181 (telephone number)

Funding Period: July 1, 1980-June 30, 1981

PROJECT DESCRIPTION

Two nursing teachers with the assistance of the developmental committee developed the first semester nursing course Nursing 202 for the Associate Degree Nursing Program into a competency-based format.

PROJECT DELIVERABLES (PRODUCTS AND SERVICES)

1. A course of study for Nursing 202.
2. A competency profile for Nursing 202.
3. A set of student competency sheets for all units of instruction for Nursing 202.
4. A Teacher's Guide which contains test questions, instructions, keys, and bibliography.

FINDINGS

It is hoped that this format will: enhance learning by better meeting student individual learning styles; shorten the time required to reach a prescribed level of performance; improve the curriculum materials in the nursing program. It will broaden the admission policies.

IMPACT

It is hoped that the course developed will provide for a pattern of articulation on the Eastern Shore between Secondary institutions, health occupation programs and other nursing programs and the nursing program of Wor-Wic Tech Community College.

RECOMMENDATIONS

Continue to develop other courses in the curriculum into competency based format.

Statement of Problem

Development of the Curriculum into a competency-based format so that admission policies can be made broader to better accomodate students from secondary education, other nursing schools, and work experience into the college nursing program.

Rationale

It is hoped that this format will: enhance learning by better meeting student individual learning styles; shorten the time required to reach a prescribed level of performance; improve the curriculum materials in the nursing program. It will broaden the admission policies.

Objectives

Develop a competency based course content.
Divide the content into modules.
Develop learning packages with performance objectives.
Construct a challenge examination for the course.
Write a teacher's guide which contains instruction, keys, bibliography, and competency profile.

Methodology

The project was developed by two nursing teachers in the nursing department in concert with the developmental committee.

Form and meet with a developmental committee consisting of: State Specialist in Curriculum; State Specialist in Postsecondary and Adult Education; Dr. Thomas Sepe, Dean of Instruction, Wor-Wic Tech Community College; and two (2) Department of Nursing instructors of Wor-Wic Tech for Nursing 202. This committee clarified the project's objectives and provide recommendations.

Findings

See "Findings" on Final Report Abstract.

Recommendations

See "Recommendations" on Final Report Abstract

FISCAL REPORT

	RECAP OF FUNDS		
Project Title: Contractor: Duration of Project:	Approved Federal Funds	Expended Project Funds	Balance (if any)
1. PERSONNEL	2552.26	2552.00	
2. FRINGE BENEFITS	15.74	170.00	
3. TRAVEL	90.00	60.00	
4. SUPPLIES - office	192.00	118.00	
5. EQUIPMENT AND MATERIALS (typewriters, etc.)	donated	-0-	
6. COMMUNICATIONS			
7. CONSULTANTS	150.00	-0-	
8. CONTRACT SERVICES			
9. OTHER COSTS - Duplicating		100.00	
TOTALS	3000.00	3000.00	

* This form must be included with all final reports
* All funds must be expended by June 30 of each fiscal year

COURSE OF STUDY

FALL 1981

SCHOOL: Wor-Wic Tech Community College

COURSE TITLE: Nursing V (202)

DEPARTMENT: Associate Degree Nursing Major

INSTRUCTORS: M. Hensinger; P. Waskey

CREDITS: 6 semester hours; Instruction: Theory 120 hrs. Clinical: 180 hrs. (Total 300 hrs.)

PREREQUISITE(S): completion of all Level I Nursing courses or equivalent; current CPR Certification ; standard First Aid or equivalent

COURSE DESCRIPTION:

A comprehensive study of the nursing care of patients with pathophysiological disruptions. Underlying concepts relate to the nursing process, Maslow's hierachy of human needs and the adult life cycle that focuses on common stress factors.

Concurrent clinical laboratory experience integrates classroom theory to in-hospital patient care.

COURSE OBJECTIVES:

Upon the successful completion of this course, the student will be able to:

1. Know the pathophysiological processes in altered homeostatic systems.
2. Understand the rationale for the therapeutic correction of these altered homostatic systems.
3. Provide for patients covert, as well as overt, physical and emotional needs, using the nursing process.
4. Use communication skills and basic mental health concepts to develop one-to-one relationships with patients.
5. Observe, record and share with appropriate persons the physical and emotional conditions of patients, as well as subtle variations which may be indicative of change.
6. Participate in the rehabilitation of patients as cooperating members of the health care team, by contributing goals formulated using the nursing process.
7. Perform technical nursing skills and medication administration using specialized knowledge and understandings.
8. Demonstrate self-awareness of nursing behaviors in completing a self-evaluation of weekly clinical experiences.
9. Use appropriate resource materials or persons for their own learning when needed, and for patient teaching when indicated.
10. Show responsibility for their own actions by: preparation and completion of all assignments; regular attendance and promptness following established policies and procedures; knowledgeable decisions regarding the technical aspects of nursing care; perception of patient's cultural values; and appropriate ethical behavior.

CONTENT OUTLINE:

Unit I: Basic Concepts
- A. Nursing Process
- B. Maslow's Hierarchy
- C. Life cycle/needs
- D. Stress: surgery

Unit II: Gas Transport Problems
- A. Respiratory Acidoses/Alkalosis
- B. Metabolic Acidoses/Alkalosis

Unit III: Cardiovascular Problems
- A. Cardiac obstruction
- B. Surgery
- C. Peripheral obstructions
- D. Blood component defects

Unit IV: Endocrine Dysfunction
- A. Adrenal
- B. Thyroid
- C. Parathyroid
- D. Pituitary
- E. Pancreas
- F. Liver
- G. Biliary

Unit V: Problems of Nutrition
- A. Upper GI obstructions
  - 1. Throat
  - 2. Esophagus
  - 3. Gastric
- B. Lower GI obstructions
  - 1. Infections
  - 2. Malabsorption
  - 3. Cancer

Unit VI: Urinary Obstructions
- A. Infection
- B. Calculi
- C. Tumors
- D. A/C Renal Failure

Unit VII: Neuro-Muscular-Skeletal Problems
- A. Chemical disruptions
- B. Cranial pressures
- C. Degeneration
- D. Mobility disorders
- E. Impaired sensory: Eye/Ear

CONTENT OUTLINE: (cont'd)

Unit VIII: Malignancy and Sexual Identity
- A. Treatments
- B. Body Image
- C. Male:
  - 1. Prostate
  - 2. Testicular
- D. Female:
  - 1. Uterus
  - 2. Breast

Unit IX: Burn Management
- A. Emergency
- B. Skin-cardiovascular
- C. Major organs
- D. Wound care
- E. Wound healing
- F. Psychosocial

INSTRUCTIONAL MATERIALS, SUPPLIES AND EQUIPMENT:

Required Texts: Shafer: Medical-Surgical Nursing, Mosby Co., 1980.
Rodman/Smith: Clinical Pharmacology In Nursing, Lippincott, 1979.
Tilkian, Clinical Implications of Lab Tests, Mosby, 1979.

Clinical Teaching Facilities: Dorchester General Hospital, Cambridge
Peninsula General Hospital, Salisbury
Memorial Hospital, Easton
Deer's Head Center, Salisbury

Teaching Methods:
- Bibliographic Readings
- Charts
- Demonstrations
- Drug Cards
- Films and Filmstrips
- Group discussion
- Individual and group discussion
- Learning packets
- Lecture
- Nursing Care Plans
- Observations
- Patient Care Assignments
- Records and Tapes
- Reports
- Transparencies
- Video Tapes

EVALUATING SYSTEM:

1) A minimal grade of 75% or C in theory.
2) Satisfactory performance of each course objective.

COMPETENCY PROFILE

Student's Name ______________________________

Teacher's Name ______________________________

Course: Nur. 202 - Nursing V

Course Completed: ______________________________

Name of School: Wor-Wic Tech Community College

BACKGROUND INFORMATION: The following includes all of the competencies included in the study of the nursing care of patients of all ages with disorders of the cardiovascular, respiratory, renal, nervous systems and of fluid and electrolyte balance. They are listed according to units. Large units are divided into modules. All of the skills must be learned proficiently before a student completes the program.

RATING SCALE:

S - Can do all parts of the task efficiently. Analyzes facts and principles.

U - Unable to do all parts of the task with minimum proficiency.

COMPETENCIES:

Unit I: Basic Concepts

A. Adult Patient Needs
- ______ 1. List the stages of Maslow's Hierarchy of need.
- ______ 2. Identify stressors related to each stage in the life cycle.
- ______ 3. Relate similarities of developmental needs from Erikson, avighurst, and Piaget.
- ______ 4. Discuss the concepts of stress, crisis, chronic illness, body image, sensory deprivation, death, and cultural diversity.

B. The Client Requiring Surgery
- ______ 1. List significant risk factors that influence a client's surgical recovery.
- ______ 2. Identify nursing measures related to preoperative preparation of the client and family.
- ______ 3. Relate types of anesthesia and significant side effects.
- ______ 4. List at least four measures of hemostasis used in surgery.
- ______ 5. Identify nursing interventions in assessing a client postoperatively.

Unit I - (cont'd)

C. Postoperative Nursing Assessments
1. Identify common postoperative complications and appropriate preventive measures in nursing care.
2. Differentiate common stressors which result in fluid shifts in the three fluid compartments.
3. Differentiate the behaviors which accompany fluid shifts.
4. Identify appropriate fluid and electrolyte therapy for clients with fluid imbalance from surgery.
5. List appropriate nursing interventions specific to clients experiencing a disruption of hydration.
6. Identify behaviors of clients experiencing imbalance of the electrolytes: Na+, K+, Ca+, Mgtt.
7. Analyze causes underlying the imbalance of electrolytes.
8. Identify treatment and nursing intervention appropriate to each imbalance.
9. State appropriate nursing interventions in caring for clients receiving IV therapy.

Unit II - Gas Transport Problems

A. Respiratory Assessment
1. List the factors about the head and neck, chest and extremities to be inspected in assessing respiratory function.
2. Describe the three types of breath sounds; describe normal respirations.
3. Distinguish between rales, ronchi, and adventious sounds.
4. Recognize the purposes of sputum examination and outline the steps in sputum collection, including gastric washings.
5. Define the normal values in Arterial Blood-Gas (ABG's) determinations.
6. Give common causes of: respiratory acidosis, metabolic acidosis, respiratory alkalosis, metabolic alkalosis
7. State the compensatory mechanisms in the 4 altered states in #6.
8. Outline the steps in preparing patients for pulmonary function studies.
9. Give the purposes of studies which provide direct visualization of the chest and respiratory tract.
10. State the purpose of the lung scan.
11. Enumerate the points to be considered in giving nursing care to patients having assessment of their respiratory function.
12. Describe nursing interventions and evaluation for the care of a patient having thoracic surgery.

Unit III - Cardiovascular Problems

A. Cardiovascular Problems

1. List the dominant cardiac risk factors.
2. Locate the following peripheral arterial pulses
   - a. carotid
   - b. brachial
   - c. radial
   - d. femoral
   - e. popliteal
   - f. posterior tibial
   - g. dorsalis pedis
3. State the normal response to testing for capillary filling.
4. Give 2 causes of pallor, 1 cause of mucosal cyanosis, and 2 causes of cyanosis of the skin and nail beds.
5. Distinguish between the causative mechanisms of edema relieved by gravity and pitting edema.
6. Describe the changes which will occur in the blood count in bacterial endocarditis, intracardiac shunts, and myocardial infarction.
7. Recall the normal range for the Partial Thromboplastin Time (PTT) and why this test is performed on patients receiving heparin.
8. State what is determined by the Prothrombin Time, why this is done on patients on anticoagulant therapy, what the normal range is, and what the therapeutic range may be.
9. Describe the relationship between cardiac disease and tests of kidney function such as urinalysis and Blood Urea Nitrogen (BUN).
10. Recognize the normal ranges for Serum Triglycerides and Serum Cholesterol.
11. Recall that, of the "cardiac" enzymes CPK increases early following infarction, LDH levels peak about 12 hours after infarction, and that SGOT increases within 24 hours.
12. Describe how the Erythrocyte Sedimentation Rate (ESR) is used to monitor the progress of patients with inflammatory heart conditions.
13. Match the sequence of events in the cardiac cycle with the appropriate part of the P,Q,R,S, and T waves and the PR interval and ST segment of the ECG.
14. Detail how venous pressure may be determined and name 2 conditions in which this is useful.
15. State the significance of a high or rising Central Venous Pressure (CVP) as well as a low or falling CVP.
16. List 2 conditions in which elevation of Pulmonary Artery Pressure (PAP) may occur and 2 conditions in which an elevated Pulmonary Capillary Wedge Pressure (PCWP) may result.
17. Explain what is represented by the Pulmonary Capillary Wedge Pressure (PCWP).
18. Describe the post-examination nursing care of patients undergoing cardiac catheterization, arteriography and angiography.

Unit III - (cont'd)

19. Define echocardiogram and list three cardiac conditions which it may detect.
20. State the significance of paroxysmol nocturnal dyspnea and 3 pillow orthopnea in a patient with congestive heart failure.
21. Relate 3 major teaching needs of a patient being discharged with congestive heart failure.
22. Relate 3 major teaching needs of a patient being discharged with congestive heart failure.
23. Name 3 causes of secondary hypertension.
24. Describe 3 disruptions of blood that effect white, red, and platelet cell counts.

Unit IV - Endocrine Dysfunction

A. Caring For the Patient With Endocrine Problems

1. Explain the principles of closed-loop feedback of endocrine hormone regulation using the thyroid gland as an example.
2. Identify for each endocrine gland (adrenal, pituitary, thyroid, parathyroid, and pancreas) the following:
   a. Functions of the hormone excreted.
   b. Symptoms that occur with excess of deficit of the hormone.
   c. Diagnostic tests used to identify imbalance.
   d. Medications and treatments used to correct the imbalance.
   e. Specific nursing interventions and assessments needed to care for the patient with dysfunction of each endocrine gland.

B. Caring For The Patient With Problems of The Liver

1. Identify the signs and symptoms of cirrhosis and diagnostic tests used to evaluate liver function.
2. Describe the effects of portal hypertension, ascites, and encephalopathy on the patient with liver damage.
3. State specific nursing assessments and interventions for these complications in cirrhosis:
   Inadequate nutrition and metabolism.
   Fluid and electrolyte imbalances.
   Coagulation problems.
   Decreased resistance to injection.
   Inability to detoxify substances.

C. Caring For The Patient With Problems of the Biliary System

1. Identifys common symptoms of cholelithiasis.
2. Demonstrate knowledge of biliary system function by explaining the presence of juandice with cholelithiasis.
3. State common drugs used for pain in biliary colic and those to avoid.
4. Relate significant nursing interventions in a patient having had a cholecystectomy.

Unit V: Problems of Nutrition

I. Upper GI Obstructions

A. Describe nursing interventions for clients' having radical neck dissection for cancer of the larynx.

B. Relate common symptoms and treatment for clients' with esophageal:
   1. diverticulum
   2. chalasia
   3. hernia (Hiatial)
   4. cancer

C. Compare and contrast symptoms and treatments for:
   1. gastritis - acute and chronic
   2. peptic/duodenal ulcer
   3. gastric cancer

D. Identify side effects from the following gastric surgical procedures:
   1. Vagotomy and Psyloroplastry
   2. Andrectomy
   3. Billroth I
   4. Billroth II

E. Identify nursing responsibilities related to gastric post-op care.

II. Lower GI Obstructions

A. Differentiate the characteristic signs of small versus large intestinal obstruction.

B. State at least 3 types of mechanical and functional obstruction of the small and large intestines.
   Identify:
   1. complications
   2. nursing interventions

C. Identify major characteristics in the diagnosis of Regional Enteritis and Ulcerative Colitis. State the following in relation to each disease process:
   1. medications
   2. nutrition
   3. cultural diversity patterns
   4. complications

D. Identify the following in relation to diverticulitis and cancer of the large intestine:
   1. signs and symptoms
   2. diagnosis
   3. treatment
   4. potential complications of surgery

E. Relate the types of ostomy procedures to their location and type of discharge
   1. Identify specific teaching needs of patients with permanent ostomies.

Unit VI: Urinary Obstruction

______ A. Identify common signs and symptoms of urinary tract infection
    1. State medical treatments for acute-chronic pyelonephritis.
    2. Describe nursing interventions to prevent and control infection.

______ B. Identify the following parameters for renal and ureteral calculi
    1. Causes of formation.
    2. Signs and symptoms.
    3. Diagnosis.
    4. Nursing interventions.
    5. Complications of surgery.

______ C. Describe underlying pathology of nephrosis versus hydronephrosis.
    1. State nursing interventions in caring for a client with nephrosis.

______ D. Describe 3 types of urostomy surgery for cancer of the bladder
    1. Identify postoperative assessments.
    2. State nursing interventions for urostomy care.

______ E. Relate the following for acute-chronic renal failure:
    1. Signs and symptoms.
    2. Diagnosis.
    3. Nursing interventions.
    4. Peritoneal dialysis procedure.
        a. aseptic technique
        b. charting
        c. client assessments
    5. Hemo dialysis treatments:
        a. fistula vs shunt
        b. nursing interventions
    6. Identify problems in renal transplants

Unit VII: Problems of Neuro-Muscular-Skeletal Systems

I. Neuro-chemical Disruptions
______ A. State the types of seizures and nursing interventions for a patient on seizure precautions.
______ B. Relate teaching needs for a newly-diagnosed patient with epilepsy.

II. Intracranial Pressures (IICP)
______ A. State signs of IICP.
______ B. List specific nursing care for an unconscious patient.
______ C. State the types of disruptions that cause CVA's.
______ D. Identify nursing interventions for acute care of CVA patients and also rehabilitation phase.

Unit VII: (cont'd)

III. Degenerative Disease

______ A. Describe the pathology behind Parkinson, Myasthemia Gravis, Muscular Dystrophy and Multiple Sclerosis.
  1. Relate specific nursing interventions for each.
  2. Select appropriate actions and side effects of common medications used.

IV. Mobility Disruptions

______ A. Identify assessments and nursing interventions for spinal cord injury.
  1. Describe spinal shock.

______ B. Identify types of traction and nursing interventions for each.

______ C. Describe postoperative care for a patient with a fractured hip having an open reduction.

______ D. Compare and contrast osteoarthritis and rheumatoid arthritis.
  1. Identify specific teaching needs for rehabilitation of each.

______ E. Assessment of a Client With Pain
  1. State factors that influence a client's perception of pain.
  2. List various methods to relieve intractable pain.
  3. Compare and contraast various types of analgesics and their appropriate use.
  4. Relate appropriate nursing interventions in helping clients deal with pain.

V. Impairment of Special Senses

______ A. Relate examples of sensory deprivation and overload in the hospitalized elderly.
  1. Identify at least three stressors which percipitate alterations in auditory and visual perceptions.
  2. Identify nursing interventions that alleviate or minimize stressors that create sensory deprivation or overload.

______ B. List five behaviors that elderly clients may exhibit with impaired vision.

______ C. Relate the visual effects of glaucoma and cataract on a patient.
  1. State postoperative nursing care with eye surgery.

______ D. Identify nursing measures for the blind or deaf that incorporate safety and respect for the client.

______ E. State postoperative needs of patient's having stapedectomy.

Unit VIII: Malignant Neoplasms and Sexual Identity

A. Caring For the Client With Neoplasia:
______ 1. Identify risk factors in heredity, environment, and the individual that may predispose to carcinoma.
______ 2. List diagnostic measures used to confirm presence and extent of carcinoma.
______ 3. Relate four therapeutic measures used to control carcinoma and the significant side effects.
______ 4. Identify appropriate nursing interventions for complications associated with chemotherapy.

B. Identify the significance of the loss of reproductive organs to the change in body image
______ 1. Incorporate age group tasks to patients adjustment.

C. List the signs and symptoms related to enlargement of the prostate gland
______ 1. Identify the 4 types of surgery and their implications for patient teaching.
______ 2. Plan the postoperative care for a patient having a prostateectomy.

D. Identify the methods of diagnosing testicular cancer
______ 1. Relate the major psycho-social adjustment of the young adult male with testicular cancer.

______ E. Identify the causes of pelvic inflammatory disease and the nursing interventions that are needed.

F. State 3 possible causes of endometriosis and the complications that can occur
______ 1. Identify signs and symptoms.
______ 2. Describe the choices of treatment for the patient.

G. Relate the symptoms of cancer of the cervix
______ 1. List the types of surgery required for various stages of tumor growth.
______ 2. Identify nursing interventions in post-op care.

H. In caring for a patient that requires a hysterectomy the student will be able to
______ 1. Identify the significance of the various types of surgery to the teaching needs for the patient.
______ 2. Plan the postoperative care of a patient with abdominal hysterectomy.
______ 3. Relate the physiological implications between estrogen replacement therapy versus surgical menopause.

I. In caring for a patient with cancer:
______ 1. Identify risk factors.
______ 2. List signs and symptoms.
______ 3. Explain at least 4 methods of identifying the presence of breast cancer.

Unit VIII: (cont'd)

4. Compare the 4 types of surgical intervention used.
    a. Relate the post-operative care needed for each surgery.
    b. Relate the teaching needs for each type of surgery before discharge.
5. State the side effects of radiation to the breast and what nursing actions are required.
6. Identify at least 6 major psycho-social implications of a woman having a mastectomy.

Unit IX: Problems Related to Impaired Protective Mechanisms Management of the Person With Burns

A. Describe how a victim of major burn trauma initially responds both physiologically and psychologically to the injury and what interventions will support the victim physiologically and psychologically.

1. State why burn trauma is the most critical, long-term form of trauma humans can survive.
2. List the five (5) major causes of burns.
3. Explain how to stop the burning process.
4. Give six (6) signs of inhalation injury.
5. Identify priorities for emergency care at the site of injury and in the hospital.
6. Describe the effects of burn trauma on body systems.
7. Explain intervention techniques which support physiologic function following major burn trauma.
8. State the importance of hematocrit in estimating fluid losses.
9. List the criteria for regulating fluid replacement in burn victims.
10. Explain the importance of psychological support for burn victims and their families.
11. Describe the preparation of a major burn victim for transport to a burn care center.

B. Describe specific responses of the skin and cardiovascular system to burn trauma.

1. Explain the skin's vulnerability to injury from heat.
2. Differentiate between full-thickness and partial-thickness burns.
3. Identify the three forces that maintain homeostatic fluid equilibrium.
4. Explain the disruption of fluid equilibrium following major burn trauma.
5. Describe the dynamics of plasma volume shift following major burn trauma.
6. Identify physiologic responses to burn trauma hypovolemia.
7. State cardiac output changes that precede cardiac failure in major burn trauma.
8. Explain the effect of burn trauma on coagulation mechanisms.
9. Describe the effect of wound evaporation on body heat following burn trauma.

Unit IX: (cont'd)

C. Describes specific pulmonary, renal, cerebral, psychological, gastrointestinal and metabolic responses to major burn trauma.
   1. Discuss major burn trauma as a multi-system assult.
   2. Describe the mechanism that produces inhalation injury.
   3. Explain the response of the pulmonary system to burn trauma.
   4. Detail responses of the renal system to burn trauma.
   5. State criteria of adequate fluid replacement following burn trauma in terms of excretion of sequestered fluids.
   6. Explain cerebral responses to major burn trauma.
   7. Describe the effect of underlying organic and psychological conditions on cerebral responses to major burn trauma.
   8. List the neurohormonal effects of burn trauma on the gastrointestinal system.
   9. Specify prevention of gastrointestinal ulceration following major burn trauma.
   10. Describe the effect of major burn trauma on cellular metabolism.
   11. Identify the need for hyperalimentation to overcome metabolic deficits.

D. Describe major objectives in management of wounds of burn trauma.
   1. List the three major objectives for the management of burn trauma wounds.
   2. Describe two approaches for meeting cellular hyper-metabolism following major burn trauma.
   3. Compare advantages and disadvantages of the most commonly used topical antimicrobial agents used in burn wound management.
   4. Identify techniques used for removal of necrotic tissue from burn wounds.
   5. List the advantages and disadvantages of open, closed, and semi-closed techniques for burn wound care.
   6. Enumerate measures that can be taken to promote comfort and pain relief in the management of burn wounds.

E. Describe the interrelatedness of functional loss and the healing process in burn trauma.
   1. List the causes of burn wound contracture deformities.
   2. Describe the effect of healing on adjacent structures.
   3. Identify the three approaches to prevention of contraction deformities.
   4. Explain the process of burn wound closure in the absence of epithelium.
   5. Rank the priorities for grafting following major burn wound trauma.
   6. Compare types of autografts and their uses.
   7. Describe the care of donor and recipient sites following autografting.
   8. Explain techniques for minimizing hypertrophy of scar tissue.

Unit IX: (cont'd)

F. Describe effects of major burn trauma as sudden, catastrophic assault on the existence of a human being.

______ 1. Identify psychologic responses to the effects of major burn trauma, as they relate to victims and families perceptions and behaviors.

______ 2. Describe the effects of sensory overload and sensory deprivation on burn victims.

______ 3. Discuss regressive behavior and the tendency of health care team to accentuate it in burn trauma care.

______ 4. Discuss the stages of mourning as they apply to burn victim, family and health care team during adaptation to burn trauma.

______ 5. Describe the impact of loss of physical abilities on the burn victim's ability to adjust to social expectations.

______ 6. Explain techniques for assessment and intervention to enhance adaptation and psychosocial survival of the burn victim.

Competencies:

Unit I: Basic Concepts

A. Adult Patient Needs
  1. List the stages of Maslow's Hierarchy of needs.
  2. Identify stressors related to each stage in the life cycle.
  3. Relate similarities of developmental needs from Erikson, Havighurst, and Piaget.
  4. Discuss the concepts of stress, crisis, chronic illness, body image, sensory deprivation, death, and cultural diversity.

B. The Client Requiring Surgery
  1. List significant risk factors that influence a client's surgical recovery.
  2. Identify nursing measures related to preoperative preparation of the client and family.
  3. Relate types of anesthesia and significant side effects.
  4. List at least four measures of hemostasis used in surgery.
  5. Identify nursing interventions in assessing a client postoperatively.

C. Postoperative Nursing Assessments
  1. Identify common postoperative complications and appropriate preventive measures in nursing care.
  2. Differentiate common stressors which result in fluid shifts in the three fluid compartments.
  3. Differentiate the behaviors which accompany fluid shifts.
  4. Identify appropriate fluid and electrolyte therapy for clients with fluid imbalance from surgery.
  5. List appropriate nursing interventions specific to clients experiencing a disruption of hydration.
  6. Identify behaviors of clients experiencing imbalance of the electrolytes: Na+, K+, Ca+, Mg++.
  7. Analyze causes underlying the imbalance of electrolytes.
  8. Identify treatment and nursing intervention appropriate to each imbalance.
  9. State appropriate nursing interventions in caring for clients receiving IV therapy.

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Student Competency Sheet

Unit I: Basic Concepts: Stress
Module A: Adult Patient Needs

Competency: Applies developmental concepts to the bio-psycho-social stress state of the hospitalized patient with acute illness.

Performance Objective: The student will choose 2 articles to read and apply the themes to specific age group, incorporating the concepts of Maslow, Piaget, Erikson, or Havighurst and the life cycle needs.

Learning Activities:

_______ 1. Attend lecture on the various concepts of development and the life cycle.

_______ 2. Discuss the concepts in writing by applying the 2 articles read to an adults' developmental stage.

Evaluation: Written discussion from concepts presented in class and from 2 articles read and expressed adequately and related to a specific age group.

Extended Learning Activities:

_______ 1. Read: Shafer's: Chronic Illness, pp. 251-263.

_______ 2. Discuss article application to concepts in class.

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Unit I: Basic Concepts: Stress
Module A: Adult Patient Needs

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Teachers Guide

Unit I: Basic Concepts: Stress
Module A: Adult Patient Needs

1. Handout on developmental stages (Maslow, Piget, Erickson, Havighurst).
2. Have a few students discuss their papers in class applying the concepts of an article to an age group.

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Student Competency Sheet

Unit I: Basic Concepts: Stress
Module B: Preoperative Nursing Care

Competency: Identifies appropriate assessments of a client scheduled for surgery.

Performance Objectives:

1. Identifies major risk factors of a pre-operative client by the application of systematic assessment tool. (outline)
2. List standard routine procedures for a preoperative client and their significance, including teaching needs.

Learning Activities:

_______ 1. Read Shafer's: Surgical Intervention, p. 218-248.

_______ 2. Discuss in class or small group the stress factors related to a client having surgery.

_______ 3. Complete performance objectives.

Evaluation: Evaluates a patient for risk factors and stressors by completing the assessment form.

Enrichment Activity:

_______ 1. Observation of major surgery in an operating room.

_______ 2. Read a surgical patient's chart noting risk factors involved and any complications that occurred.

_______ 3. Research the preoperative protocol for a surgical patient in a given hospital surgical floor. Discuss in class.

_______ 4. Using the Systematic Assessment Sheet provided, interview a patient (and from chart) for data to evaluate areas of risk factors and stress.

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Teachers Guide

Unit I: Basic Concepts: Stress
Module B: Preoperative Nursing Care

Teachers Note:

1. Have students identify risk factors of surgery according to various ages and physical condition. Include developmental needs, Maslow's Hierarchy, and stress factors involved.
2. Use a systematic assessment tool as an example for identifying risk factors (applying to a patient case study).

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Student Competency Sheet

Unit I: Basic Concepts: Stress and Surgery
Module C: Postoperative Nursing Assessment of Fluid & Electrolyte Imbalance

Competency: Identifies common causes of the following fluid and electrolyte imbalances and interventions that can correct these imbalances:

Intracellular loss
Interstitial loss
Intravascular loss

Hypo/Hyper-natremia
Hypo/Hyper-kalemia
Hypo/Hyper-calcemia
Hypo/Hyper-magnesemia

Performance Objective: Given a client case study, the student will identify the cause, assessment, and intervention for an imbalance in fluid and electrolytes.

Learning Activities:

______ 1. Read: Shafer's Fluid & Electrolytes: p. 142-162.

______ 2. Take pretest to review fluid and electrolyte principles.

______ 3. Apply Fluid and Electrolyte Assessment sheet to a patient's status in clinical area.

______ 4. Develop a care plan from a clinical situation that relates to fluid and electrolyte imbalance problems.

Evaluation: Achieves 75% on examination questions. Satisfactory identification of needs in care plan of clinical patient. Identifies any iatrogenic causes of imbalances.

Enrichment Activities:

______ 1. View filmstrips on Fluid & Electrolyte Imbalance - #227, 228, 229, 230, 231, 232, 233, 234.

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GUIDELINES FOR ASSESSMENT OF FLUID AND ELECTROLYTE BALANCE

FROM CHART (History, physical exam, progress notes, orders)

1. What history (acute and/or chronic illnesses, diseases, conditions, surgeries, etc.) suggest the patient could have disrupted body fluid and/or electrolyte imbalance?
2. What present illness(s), injury(s) did or could disrupt fluid and electrolyte balance?
3. Is there any abnormal loss of body fluids? What source? What is the usual associated imbalance?
4. Is there any medication(s) or other therapy(s) being received which can disrupt body fluids and electrolyte balance?
5. Are there any dietary restrictions at present or previously existent which could disrupt fluid and electrolyte balance?
6. Are there any possible reasons that an adequate amount of water and nutrients cannot be taken at present or might not have been taken prior to admission?
7. What abnormal laboratory and diagnostic tests are presently existent?

CLINICAL ASSESSMENT (Additional history, physical assessment, assessment of physiological parameters, laboratory data)

1. What abnormal clinical findings exist?
2. Could these abnormal findings be related to a fluid and/or electrolyte imbalance(s) in this patient?
3. What therapy(s) is being received for the imbalance(s) or to prevent imbalances?
4. What imbalance(s) could occur from this present therapy?
5. What should your nursing responsibilities be in relation to 1) assessment, 2) prevention of fluid and electrolyte imbalance, and 3) therapeutic measures for imbalances in this patient?

Adapted From: Norma Metheny and W. D. Snively, Nurses' Handbook of Fluid Balance, 2nd edition (Philadelphia: J. B. Lippincott), pp. 56-59.

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Teachers Guide

Unit I: Basic Concepts: Stress and Surgery
Module C: Assessing fluid and electrolyte needs of patients in hospital setting

Teachers Note:

1. Handout on replacement fluids commonly used - identifing hypotonic, isotonic, and hypertonic solutions.
2. Use pretest for student review of physiology and terminology.

Bibliography:

1. Baxter: Guide to Fluid Therapy, Travenol Laboratories, Inc. 1970.

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Unit I - Pretest for Review

Fluid & Electrolyte Balance

1. _______ The percentage of body weight made up of water gradually _______ from birth to old age.

2. _______ Which of the three fluid space (compartment) of the body contains the greatest amount of water?

3. _______ Ions with a positive charge are called _______.

4. _______ Ions with a negative charge are called _______.

5. _______ The primary intracellular cation is _______.

6. _______ The primary extracellular cation is _______.

7. _______ The electrolyte most associated with neuromuscular irritability is _______.

8. _______ Collodial osmotic pressure within the vascular system is maintained by normal serum levels of _______.

9. _______ A highly concentrated solution of non-permeable particles is placed on side A of a semi-permeable membrane. On side B is placed a weakly concentrated solution of non-permeable particles. Water will pass the membrane causing the amount of fluid of side A to _______.

10. _______ Edema is a clinical condition, wherein excessive fluid is found in the _______ space.

11. _______ Two hormones directly involved with sodium and water balance are _______.

12. _______ Which solutions exert the same osmotic pressure than extracellular fluid?

13. _______ Which solutions exert greater osmotic pressure than extracellular fluid?

14. _______ Maintenance of acid-base balance is provided by _______ (list three).

15. _______ Severe dehydration is most often accompanied by which acid-base imbalance?

16. _______ As the amount of fatty tissue in the body increases the amount of total body water _______.

A. anions
B. aldosterone
C. cations
D. hypotonic
E. potassium
F. thyroxin
G. increase(s)
H. ADH
I. isotonic
J. intracellular
K. chloride
L. sodium
M. insulin
N. calcium
O. hypertonic
P. interstitial
Q. decrease(s)
R. protein
S. buffer system
T. kidney
U. extracellular
V. G.I. system
W. lungs
X. magnesium
Y. acidosis
Z. alkalosis

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Unit I: Basic Concepts: stress; surgery

Competency Exam

Stress

1. Developmental tasks may be described as:
   a. all the activities performed throughout life.
   b. learned physical activities, primarily in mid-life.
   c. things to be learned and changes to be accomplished.
   d. all the actions taken by an individual when confronted with specific problems.

2. Anxious persons usually:
   a. are not aware of the cause(s) of their anxiety.
   b. know what is causing their anxiety.
   c. like to talk about their anxieties.
   d. expect the nurse to point out the causes of their anxieties.

3. Members of the health professions often avoid dying patients and their families because:
   1. they don't wish to confront their own anxieties about death.
   2. providing support for these people is the duty of other professions, such as the clergy.
   3. the death of the patient may signify their failure as healers.
   4. most families are self-sufficient in coping with death.

   a. 1,3
   b. 2,3
   c. 2,4
   d. all of these

4. According to Kubler-Ross, the dying patient's full of awareness of the truth of his situation will usually occur in the stage of:
   a. denial.
   b. anger.
   c. depression.
   d. acceptance.

5. The purpose of adjustment mechanisms is to:
   a. increase self-esteem.
   b. decrease anxiety.
   c. conserve energy.
   d. cope with internal conflicts in an efficient manner.

6. The most commonly used adjustment mechanism:
   a. rationalization.
   b. undoing.
   c. sublimation.
   d. projection.

7. Homeostasis may be defined as a:
    a. condition where opposing forces create an imbalance.
    b. state of inequality.
    c. method of keeping the body in a neutral state.
    d. state of the body when there is dynamic equilibrium.

8. Which of the following are functions of aldosterone?
    a. Regulation of blood glucose.
    b. Synthesis of protein to amino acids.
    c. Sodium retention.
    d. Decreased water excretion.

9. The dirrect effect of stress is an increased secretion of cortiocotropin by the anterior pituitary. Corticotropin acts on the adrenal cortex to increase secretion, primarily of:
    a. mineralocorticoids.
    b. glucocorticoids.
    c. epinepherine.
    d. norepinepherine.

Fluid and Electrolyte

10. Which of the following is the most important parameter to assess over0 hydration in caring for any client who is being rehydrated?
    a. Complaints of thirst.
    b. Orientation
    c. Skin turgor.
    d. Consistency of stool.

11. Third space fluid shifts can occur in burns, ascites and several other conditions. In caring for a client who is actively accumulating fluids in the third space, the nurse should be certain to:
    a. maintain intracellular volume.
    b. maintain intravascular volume.
    c. decrease interstitial volume.
    d. prevent plasma expansion.

12. The two major forces which regulate the movement of fluid between the intravascular and interstitial spaces are the:
    a. hydrostatic pressure of the blood.
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13. Mr. R. had abdominal surgery. A nasogastric tube was inserted and drainage is being measured q4h. Two types of IV fluids are running: D 5w 0.2 NaCl and Ringer's Lactate. The purpose of the Ringer's Lactate solution is to:
    a. administer fluids to correct acid-base imbalances.
    b. maintain a route for replacement of blood loss.
    c. meet basal metabolic needs.
    d. maintain a route for IV medications.
    e. restore fluids and electrolytes depleted by losses.

14. Mrs. P. had an NG tube inserted for tube feedings. She is to receive 200 ml. of feeding (2 cal per ml) q3h. After a few feedings, it is noted that Mrs. P. has had several loose watery stools and that her urine output has dropped. Which would be the most appropriate action?
    a. Stop the tube feedings and keep her NPO until the diarrhea stops.
    b. Request IV infusions until the diarrhea stops.
    c. Check about an order for paregoric or other antidiarrhea drug.
    d. Check about increasing the amount of fluid given with the tube feeding.

15. Infectious Disease: 85% of infections in a hospital setting are nosocomial in origin. The most common are those associated with:
    a. contact with infected patients.
    b. respiratory equipment.
    c. indwelling catheters.
    d. wound dressings.

16. When you came on duty at 11:00 p.m., you checked the intake and output of a 25 year old man who had undergone an appendectomy earlier in the day. You observed that his intravenous intake had been 920cc and his urinary output 550cc for an 8 hour period. Which of the following actions should you take?
    a. Slow the IV and notify the doctor as the patient will soon be showing signs of water intoxication.
    b. Go on about your work because this is within a normal intake to urine output ratio, and continue to check the I&O at intervals.
    c. Discontinue the IV and give small amounts of fluid by mouth to prevent overloading.
    d. Call the doctor and ask for instructions.

Surgery

17. Mr. T. is scheduled for 10 a.m. surgery. When giving his pre-op medication (Demerol 100 mg. and Atropine 0.4 mg), which of the following should the nurse explain to the patient? The medication will decrease:
    a. the pain of surgery and reduce muscle spasms.
    b. the needed amount of post-op parenteral fluids.
    c. nausea and vomiting when reacting from anesthesia.
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18. Which of the following interventions would help prevent atelectasis?
    a. Avoid use of ambu unless client fights ventilator.
    b. Make sure client receives enough oxygen.
    c. Suction when scheduled.
    d. Turn q2h.

19. The best definition of inflammation is:
    a. accumulation of fluid in the cells due to failure of the sodium pump.
    b. is invasion of tissue by pathogenic organisms.
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21. If a patient has all of the following needs, which one should receive first priority.
    a. Control of pain and restlessness.
    b. Maintenance of an open airway.
    c. Maintenance of fluid-electrolyte balance.
    d. Monitoring of neurological status, including vital signs.

22. In order to promote rest, which of the following nursing activities would be used.?
    1. Controlling or eliminating noise.
    2. Giving a blanket to a patient who is cold.
    3. Spacing nursing activities for the benefit of the patient rather than the convenience of the nurse.
    4. Offering between-meal feedings.
    5. Keeping the patient out of bed as much as possible so he will sleep well at night.

    a. 1,2,3
    b. 1,2,4
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23. Which of the following is the best method of initially attempting to mobilize secretions?
    a. Chest physiotherapy.
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24. All of the following are used to mobilize secretions except:
    a. postural drainage.
    b. maintain cool oxygen supply.
    c. clapping and vibrating.
    d. maintain adequate intake and output.

Pain

25. Which of the following elements should you evaluate in assessing pain?
    1. Provocative or precipitating factors.
    2. Quality.
    3. Severity.
    4. Region.
    5. Duration and relief manuvers.

    a. 1,2,4
    b. 3 and 5
    c. all but 5
    d. all of these

26. How effective are oral narcotic analgesics compared to similar doses of parenteral drugs?
    a. Much less effective.
    b. slightly less effective.
    c. equally effective.
    d. more effective.

27. For optimal results, the best time to administer a parenteral narcotic analgesic is:
    a. before the pain begins.
    b. when the pain begins.
    c. when the pain is moderately severe.
    d. when the pain is severe.

28. Patients in shock or with poor peripheral circulation should probably receive narcotic analgesics by which route?
    a. Subcutaneous.
    b. intramuscular.
    c. intravenous.
    d. none of the above.

Shock

29. Vasogenic shock is a:
    a. disproportion between the amount of plasma and the number of blood cells.
    b. hypovolemic shock.
    c. vasodilitation resulting from an increase in the size of the vascular bed.

30. Central venous pressure (CVP) is the pressure:
    a. in the venous circulation as measured in the extremities.
    b. of the blood in the right atrium.
    c. of venous blood in the center of the body.
    d. that is measured by inserting a catheter in the left ventricle.

31. Vasoconstriction, the body's physiologic response to shock, contributes to:
    a. an increase in urinary output as the body tries to compensate for shock.
    b. a decrease in urinary output because of an increase in renal blood flow.
    c. a marked reduction in renal blood flow and a decrease in urinary output.

32. The doctor should be notified if the patient in shock has an hourly urinary output of less than:
    a. 30cc.
    b. 90cc.
    c. 60cc.
    d. 125cc.

33. The patient in shock should be kept warm, not hot, because excessive heat results in:
    a. vasoconstriction.
    b. hypertension.
    c. bradycardia.
    d. vasodilitation.

34. Cardiogenic shock is due to:
    a. failure of the heart as an efficient pump.
    b. cardiac arrest.
    c. blood loss which causes heart failure.

35. Individuals at risk for hemolytic (incompatibility) reactions to transfused blood are those sensitized to red blood cell antigens by:
    a. prior transfusions.
    b. prior pregnancy.
    c. both a and b.
    d. neither a nor b.

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    c. clapping and vibrating.
    d. maintain adequate intake and output.

Pain

25. Which of the following elements should you evaluate in assessing pain?
    1. Provocative or precipitating factors.
    2. Quality.
    3. Severity.
    4. Region.
    5. Duration and relief manuvers.

    a. 1,2,4
    b. 3 and 5
    c. all but 5
    [✓ d.] all of these

26. How effective are oral narcotic analgesics compared to similar doses of parenteral drugs?
    - [✓ a.] Much less effective.
    - b. slightly less effective.
    - c. equally effective.
    - d. more effective.

27. For optimal results, the best time to administer a parenteral narcotic analgesic is:
    - a. before the pain begins.
    - [✓ b.] when the pain begins.
    - c. when the pain is moderately severe.
    - d. when the pain is severe.

28. Patients in shock or with poor peripheral circulation should probably receive narcotic analgesics by which route?
    - a. Subcutaneous.
    - b. intramuscular.
    - [✓ c.] intravenous.
    - d. none of the above.

Shock

29. Vasogenic shock is a:
    - a. disproportion between the amount of plasma and the number of blood cells.
    - [✓ b.] hypovolemic shock.
    - c. vasodilitation resulting from an increase in the size of the vascular bed.

30. Central venous pressure (CVP) is the pressure:
    - a. in the venous circulation as measured in the extremities.
    - [✓ b.] of the blood in the right atrium.
    - c. of venous blood in the center of the body.
    - d. that is measured by inserting a catheter in the left ventricle.

31. Vasoconstriction, the body's physiologic response to shock, contributes to:
    - a. an increase in urinary output as the body tries to compensate for shock.
    - b. a decrease in urinary output because of an increase in renal blood flow.
    - [✓ c.] a marked reduction in renal blood flow and a decrease in urinary output.

32. The doctor should be notified if the patient in shock has an hourly urinary output of less than:
    - [✓ a.] 30cc.
    - b. 90cc.
    - c. 60cc.
    - d. 125cc.

33. The patient in shock should be kept warm, not hot, because excessive heat results in:
    a. vasoconstriction.
    b. hypertension.
    c. bradycardia.
    [✓ d.] vasodilitation.

34. Cardiogenic shock is due to:
    [✓ a.] failure of the heart as an efficient pump.
    b. cardiac arrest.
    c. blood loss which causes heart failure.

35. Individuals at risk for hemolytic (incompatibility) reactions to transfused blood are those sensitized to red blood cell antigens by:
    a. prior transfusions.
    b. prior pregnancy.
    c. both a and b.
    [✓ d.] neither a nor b.

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Competencies:

Unit II: Gas Transport Problems

- A. Respiratory Assessment
  1. List the factors about the head and neck, chest and extremities to be inspected in assessing respiratory function.
  2. Describe the three types of breath sounds; describe normal respirations.
  3. Distinguish between rales, rhonchi, and adventious sounds.
  4. Recognize the purposes of sputum examination and outline the steps in sputum collection, including gastric washings.
  5. Define the normal values in Arterial Blood-Gas (ABG's) determinations.
  6. Give common causes of:
     respiratory acidosis
     metabolic acidosis
     respiratory alkalosis
     metabolic alkalosis
  7. State the compensatory mechanisms in the 4 altered states in #6.
  8. Outline the steps in preparing patients for pulmonary function studies.
  9. Give the purposes of studies which provide direct visualization of the chest and respiratory tract.
  10. State the purpose of the lung scan.
  11. Enumerate the points to be considered in giving nursing care to patients having assessment of their respiratory function.
  12. Describe nursing interventions and evaluations for the care of a patient having thoracic surgery.

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Student Competency Sheet

Unit II: Gas Transport Problems
Module A: Respiratory Assessment

Competencies:
1. Collect data about the patient's respiratory status which can be used to identify patient problems and for evaluating desired patient outcomes.
2. Recognize signs of alterations in respiratory function which require nursing intervention.

Performance Objectives: Given a series of items about patients respiratory status, the student will identify the purpose of the assessments, normal ranges and responses, significance of abnormal findings, and nursing care during assessment.

Learning Activities:

________ 1. Read: Shafers pp. 343-352, 151-153.

________ 2. Read del Bueno, Dorothy, "A Quick Review on Using Blood-Gas Determinations," RN, Vol. 41, No. 3 (March, 1978), pp. 68-70.

________ 3. Practice auscultation of lungs on a clinical patient (or a peer).

Enrichment Activities:

________ 1. ____________ "Pulmonary Function Tests in Patient Care," (programmed instruction), AJN, Vol. 80, No. 6 (June, 1980), pp. 1135-1161.

________ 2. Blackburn, Nancy and Cebenka, Deborah, "Honing Your Respiratory Assessment Technique," RN, Vol. 43, No. 5 (May 1980), pp. 28-33.

________ 3. "Blood Gas & Acid-Base Concepts in Respiratory Care", AJN, 76 (June) pp. 963-93.

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Teachers Guide

Unit II: Gas Transport Problems
Module A: Respiratory Assessment

AudioVisuals:

1. Concept Media: Physical Assessment of the Heart and Lungs #4 Assessing Respirations; #3 Percussion and Auscultation of the Lungs and Thorax (Part II: Auscultation) - filmstrips.
2. Fairview General Hospital: Blood Gases: 2 parts (videotape).
3. Teacher-made Transparencies: "H+ Imbalances," "Partial Pressures of Gases Diffusing Down a Pressure Gradient", "Acid-Base Imbalances".

Bibliography:

1. Muir, Bernice. Pathophysiology: An Introduction to the Mechanisms of Disease. New York: John Wiley & Sons, 1980, Chapter 10, "Oxygen Imbalance".
2. Price, Sylvia and Wilson Lorraine. Pathophysiology Clinical Concepts of Disease Processes. New York: McGraw-Hill Book Company, 1978, Part VI, "Normal Respiratory Function and Respiratory Pathophysiology".
3. Wells, K. "ARDS", NSG. 80 (May) pp. 51-56.

Key to Quiz - "Arterial Blood Gases"

1. c
2. d
3. d
4. d
5. T
6. T
7. F
8. T
9. A
10. A

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Name ______________________________

NORMAL ARTERIAL BLOOD GASES ARE: PO2--80 to 100, PCO2--35, pH--7.35 to 7.45

1. A ph of 7.34 and a PCO2 of 50 would indicate that the person has
   a. metabolic acidosis
   b. metabolic alkalosis
   c. respiratory acidosis
   d. respiratory alkalosis

2. Which one of the following blood studies is generally considered best for judging whether pulmonary ventilation is adequate?
   a. pH
   b. bicarbonate or base excess
   c. PO2
   d. PCO2

3. The pH of the blood is wihin normal range when the ratio of bicarbonate to carbonic acid is approximately
   a. 1 to 1
   b. 5 to 1
   c. 10 to 1
   d. 20 to 1

4. A ph of 7.49 and a PCO2 of 28 indicates that the person most likely has
   a. metabolic acidosis
   b. metabolic alkalosis
   c. respiratory acidosis
   d. respiratory alkalosis

The following TRUE-FALSE items relate to this data:

ph--7.20, PCO2--32, Base Excess--minus(-)11

5. T F The PCO2 is lower than normal.

6. T F The Base Excess is lower than normal.

7. T F Compensation for acidosis has begun.

8. T F The patient is in a state of metabolic acidosis.

9. The nurse can improve a patient's abnormal blood gases by positioning the patient
   a. upright in a position of comfort
   b. prone
   c. so that mucous can drain by gravity from the lungs
   d. a and c
   e. a and b

10. Oxygen is carried in the blood to the body cells in
    1. combination with the platelets
    2. a state of physical solution
    3. combination with the hemoglobin

    a. 2 and 3
    b. 1 and 3
    c. 1 and 2
    d. 1, 2, and 3

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Student Competency Sheet

Unit II: Gas Transport Problems
Module B: Management of the Person with Impaired Oxygen-Carbon Dioxide Exchange

Competency: Describe nursing interventions for persons with impairment of oxygen-carbon dioxide exchange.

Performance Objective: Given series of items concerning patients with COPD, the student will identify patient problems, relevant goals, and appropriate nursing interventions.

Learning Activities:

_______ 1. Read: Shafers pp. 352-362; 380-388.

_______ 2. Read Fuchs, Patricia, "Understanding Continuous Mechanical Ventilation, "Nursing 79, Vol. 9, No. 12 (Dec. 1979), pp. 26-33.

Enrichment Activities:

_______ 1. Read Kaufman, Jane and Woodie, Johnsie, "For Patients with COPD: Better Living Through Teaching," Nursing 80, Vol. 10, No. 3 (March, 1980), pp. 57-61.

Teachers Guide

Unit II: Gas Transport Problems
Module B: Management of the Person With COPD

Teachers Note:

1. Present a case study of a patient with COPD for the class to identify problems, goals, and nursing interventions.
2. Respiratory Therapy Departments demonstrate use of IPPB; have students try the machine on themselves.

Bibliography:

1. Lareau, S. "The Affect of IPPB on Arterial Oxygen in COPD..." Heart and Lung, 5:3 (May, 1976) p. 449.

2. Bushnell, S. Respiratory Intensive Care Nursing. Boston: Little Brown & Co., 1973.

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Student Competency Sheet

Unit II: Gas Transport Problems
Module C: Care of the Patient With Decreased Lung Expansion

Competency: Describes nursing responsibilities for a patient with lung cancer.

Performance Objective: Given a case study, the student will answer the 10 questions related to the case of the patient with a pulmonary tumor.

Suggested Learning Activities:

_______ 1. Complete the case study provided using textbooks as a resource.

_______ 2. Read: Shafers, pp. 363-369; 388-391.

_______ 3. Provide nursing care for a patient with pulmonary disease or thoracic surgery in a hospital setting.

_______ 4. Develop a nursing care plan for above patient.

Evaluation: Answer the 10 questions with 75% accuracy. Nursing care plan identifies pertinent needs of a patient.

Extended Learning Activities: Explain the principles of a water-sealed bottle for chest drainage by using diagrams.

Teachers Guide

Unit II: Gas Transport Problems
Module C: Care of Patient With Decreased Lung Expansion

1. Discuss case study questions in class.
2. Diagrams of water seal drainage helps present prinicples of chest drainage.

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Unit II - Gas Transport Problems

CASE STUDY
CARE OF A PATIENT WITH PULMONARY TUMOR

Except for a smoker's cough which has persisted over the past 2 weeks, Leonard Jones has been essentially healthy all his life. Now, at age 45, a routine hest x-ray has revealed a "spot on his lung". This news has come as a shock to Mr. Jones, a high-school teacher, who is married and the father of 2 teenaged sons.

Mr. Jones is to be admitted to the hospital for a complete diagnostic work-up. Among other tests, he is scheduled for:

Bronchoscopy
Bronchogram
Pulmonary Angiogram
Mediastinoscopy
Scalene Node Biopsy
Sputum cytology

1. What is the purpose of each of the above ordered tests?

2. a) How would you prepare Mr. Jones for the bronchoscopic exam?
   b) What are your nursing responsibilities for Mr. Jones post-bronchoscopy?

3. Mr. Jones has been advised by his doctor to stop smoking. He havitually smokes 2 packs of cigarettes daily. What nursing intervention would you employ to assist Mr. Jones in this regard?

Mr. Jones is found to have any early bronchogenic (squamous cell) carcinoma in his right lung with no demonstrable metastasis. Following bronchospirometric studies he is scheduled for resectional pulmonary surgery.

4. Discuss the nurse's role in the prevention and early detection of lung cancer.

5. How does lung cancer compare with other cancers as to incidence and mortality rate?

6. 2) Why is pulmonary cancer called the "silent disease?"
   3) What is the most common first symptom of pulmonary cancer?

Following a lobectomy (right lower lobe) under general anesthesia, Mr. Jones was taken to the recovery room in satisfactory condition. Prior to closure of the incision, 2 catheters were placed in the thoracic cavity and connected to a water-seal drainage system. Mr. Jones's post-operative orders included oxygen, antibiotic and I.V. therapy.

7. What is the rationale for closed chest drainage following a lobectomy?

8. Discuss your nursing responsibilities for Mr. Jones's post-surgery in each of the following areas:
    - a. vital signs
    - b. fluids and nutrition
    - c. pain management
    - d. positioning and turning
    - e. exercising
    - f. respiratory function
    - g. closed-chest drainage

9. On Mr. Jones's 3rd post-operative day his water-seal bottle is accidentally broken. What nursing intervention is called for? Why?

On the 5th post-operative day, x-ray indicates that Mr. Jones's right lung is fully expanded, so the chest drainage tube is removed. He progresses satisfactorily and looks forward to discharge.

10. Outline your discharge plans for Mr. Jones.

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Unit II Exam
Respiratory Assessment

Acid-Base

1. The availability of oxygen to the tissues
   a. depends on adequate cardiac output and the oxygen content of the blood.
   b. is increased in fever.
   c. remains unchanged with anemia.
   d. is increased at high altitudes.

2. In what form is most of the CO_2 carried in the venous blood?
   a. Bicarbonate.
   b. Physically dissolved in the plasma.
   c. Carbaminohemoglobin.

3. The best explanation of a buffer system is that
   a. the kidneys do most of the work in maintaining body pH.
   b. it is a mixture of an acid and a base.
   c. it is a solution of two or more chemicals which minimize changes in pH.
   d. it is the amount of hydrogen ion required to bring about a specific pH change in the blood.

4. The kidneys work to maintain normal body pH by
   a. secreting hydrogen and sodium ions.
   b. secreting ammonia.
   c. exchanging hydrogen and sodium in the kidney tubules.
   d. decreasing sodium ions, holding on to hydrogen ions, and secreting sodium bicarbonate.

5. What acid-base imbalance do the following arterial blood gases indicate?
   1. pH 7.30
   2. $PaCO_2$ 56
   3. PaO_2 60
   4. HCO_3 23

   a. Metabolic Acidosis.
   b. Metabolic Alkalosis.
   c. Respiratory Acidosis.
   d. Respiratory Alkalosis.

6. Which of the following best describes the relationship of pH to $PaCO_2$ in metabolic acidosis?
   a. The kidneys attempt to compensate by increased secretion of HCO_3 into the urine.
   b. The lungs attempt to compensate for a high pH by retaining more CO_2.
   c. The lungs attempt to compensate for an increased pH by hyperventilation and excessive loss of CO_2.
   d. The lungs attempt to compensate for a low pH by unloading more CO_2 thru hyperventilation.

7. The pH of blood remains fairly constant regardless of the product of metabolism and the variety of food intake. This ability to remain relatively constant depends upon the effectiveness of the various "buffering" mechanisms of the four "buffering" mechanisms. Of the four "buffering" mechanisms, the single most important one is the
   a. Sodium acid phosphate and diosodium phosphate system.
   b. Sodium bicarbonate and carbonic acid system.
   c. Acid and base protein system.
   d. Reduced hemoglobin system.

8. Arterial pH is kept within normal limits by all EXCEPT the
   a. kidneys.
   b. lungs.
   c. cerebral cortex.
   d. body buffer systems.
   e. body cells.

9. Carbon dioxide is present in body fluids primarily as
   a. carbonic acid.
   b. a hydrocarbon.
   c. a hydrogen ion.
   d. bicarbonate.

10. The kidney contributes to normal pH by
   a. excreting excess hydroxyl ions.
   b. maintaining serum bicarbonate levels and excreting excess hydrogen ions.
   c. maintaining hydrogen ion levels.

11. Giving a patient too much oxygen
   a. is not dangerous.
   b. can depress the respirations.
   c. is not dangerous if the patient has chronic obstructive lung disease.
   d. is not possible.

Mr. Jones appears to develop acute pulmonary edema.

12. Which observation by the nurse might best indicate pulmonary edema?
   a. A grey complexion, coughing encessantly and producing increasing quantities of mucoid sputum, neck veins distended.
   b. A flushed complexion, hacking cough, and elevated temperature.
   c. A rise in B.P., hacking cough, and rapid respirations.
   d. Frothy sputum, a drop in blood pressure, and retarded venous return to the heart.

13. Lasix is given to Mr. Jones. The desired action of Lasix is to
   a. inhibit action of aldasterone in distal tubule.
   b. increase renal excretion of Na, K, with accompanying "osmotic" water loss.
   c. block the reabsorption of Na and water in the proximal renal tubule and interfere with Na reabsorption.
   d. decrease filtration of Na in the glomerli.

After Mr. Jones developes pulmonary edema, morphine sulfate is given I.V.

14. The purpose of giving morphine to Mr. Jones is to
    a. relieve anxiety and slow respiratory rate.
    b. relieve dyspnea, reduce muscular effort of pulmonary ventilation, and improve venous tone.
    c. relieve pain, and increase peripheral resistance, and improve venous tone.
    d. prevent anxiety and a drop in blood pressure, and improve peripheral circulation.

15. Mr. Jones is placed in bed in Fowlers position for the desired effect of
    a. decreasing formation of pulmonary emboli.
    b. relieving liver congestion.
    c. decreasing pulmonary secretions.
    d. facilitate maximum lung expansion.

16. Rotating tourniquets are applied to Mr. Jones. What is the purpose of this nursing measure?
    a. Aid the arterial bloods return to the heart.
    b. Retard the venous bloods return to the heart.
    c. Increase the amount of circulating blood.
    d. Increase the output of the right ventricle.

17. When rotating tourniquets are used, you may not apply them tight enough to
    a. cause superficial veins to be engorged.
    b. create discoloring to cyonotic appearance of extremity.
    c. obliterate the arterial pulse.
    d. allowing pooling of blood in dependent parts.

18. Emphysema is a disease characterized by
    a. atelectasis of the alveoli.
    b. overdistention and loss of elasticity of the alveoli.
    c. inflammation and edema of the bronchial tubes.

19. People who are prone to get bacterial pneumonia are
    a. athletes, middle aged men, and older people with heart disease.
    b. alcoholics, chronic lungers, and those in poor general health.
    c. small children, teenagers who smoke, and those who work in dusty conditions.

20. Symptoms of bacterial pneumonia include
    a. anxiety, malaise, slowed respirations, and bradycardia.
    b. sharp chest pain, chill, increase in temperature, and rapid pulse and respirations.
    c. tachycardia, chills, abdominal pain, low white count, and dry cough.

21. Drugs used in the treatment of bacterial pneumonia include
    a. stelazine, atropine, streptomycin, and meprobamate.
    b. digoxin, meperidine, erythromycin, and thorazine.
    c. penicillin, codeine, and aspirin.

22. Tuberculosis is spread by
    a. inhaling infected droplets which are released in the air.
    b. contaminated fomites contacting broken skin.
    c. improper cleaning of dishes and bath tubs.

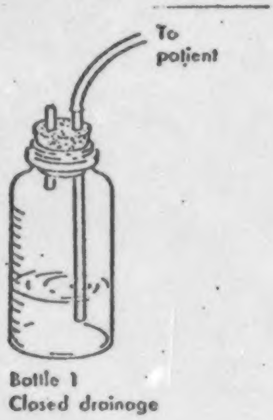
23. Symptoms of tuberculosis include
    a. fatigue, weight loss, and cough.
    b. fatigue, weight gain, and cough.
    c. anxiety, weight gain, and anemia.

24. An under-water seal drainage system re-expands the lung by
    1. draining air and fluid from the pleural cavity.
    2. sealing re-entry to the pleural cavity.
    3. restoring the normal negative intrapleural pressure.
    4. restoring the normal positive intrapleural pressure.

    a. all except 1
    b. all except 2
    c. all except 3
    d. all except 4

25. In Figure A, the bottle is vented to the outside. What prevents the outside air from entering the pleural cavity?

A



26. IPPB treatments are used primarily to
    a. provide hydration
    b. soothe pulmonary irritation.
    c. improve ventilation.
    d. administer medications.

27. Constant nursing attendance may be required for the patient with a tracheotomy primarily because
    a. there will be increased secretions requiring frequent suctioning.
    b. of the patient's inability to speak.
    c. the family usually requests it.
    d. the patient fears being left alone.

28. Postoperative coughing for patients with chest surgery is facilitated by
    1. preoperative teaching.
    2. withholding pain medication.
    3. supporting the patient on the unaffected side by pillows.
    4. sitting the patient upright.
    5. splinting the incision.

    a. 2,3,5
    b. 1,4,5
    c. 1,2,3
    d. 1,2,5

29. The most serious complications, immediate or long-term, of a radical neck dissection is
   a. infection along the suture line.
   b. carotid hemorrhage.
   c. fistula formation.
   d. graft necrosis.

30. The first thing to do if carotid hemorrhaging occurs is
   a. apply immediate pressure over the vein.
   b. apply immediate pressure over the artery.
   c. notify the physician.
   c. suction the trach to avoid aspiration of blood.

31. The purpose of a cuff on a trach tube is
   a. to prevent aspiration.
   b. to keep the trach tube in place.
   c. to facilitate suctioning.
   d. to insure patency of the airway.

32. It is extremely important that the nurse caring for a patient with an inflated cuff understand its purpose since misuse can cause
   a. mucous plugs.
   b. tracheal necrosis.
   c. dehiscence of the suture line.
   d. drying out of the tracheobronchial tree.

33. The semi-Fowler's position in postoperative period is maintained to
   a. reduce facial edema.
   b. promote drainage of mucus.
   c. facilitate respiration.
   d. all of these.

34. Heated nebulization is usually ordered for these patients in order to
   a. increase their production of mucus.
   b. liquify the mucous secretions.
   c. decrease the mucous secretions.
   d. both b and c.

35. Encouraging coughing for a laryngectomy is very important since
   a. coughing is very frightening for them.
   b. many of them have chronic lung problems.
   c. pulmonary complications can occur.
   d. all of these.

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Unit II Exam
Respiratory Assessment

Acid-Base

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23. Symptoms of tuberculosis include
    [✓ a.] fatigue, weight loss, and cough.
    b. fatigue, weight gain, and cough.
    c. anxiety, weight gain, and anemia.

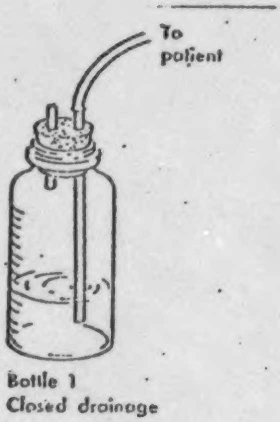
24. An under-water seal drainage system re-expands the lung by
    1. draining air and fluid from the pleural cavity.
    2. sealing re-entry to the pleural cavity.
    3. restoring the normal negative intrapleural pressure.
    4. restoring the normal positive intrapleural pressure.

    a. all except 1
    b. all except 2
    c. all except 3
    [✓ d.] all except 4

25. In Figure A, the bottle is vented to the outside. What prevents the outside air from entering the pleural cavity?

Answer:
The tip of the drainage
tube is underwater,
creating a seal.

A



Bottle 1
Closed drainage

26. IPPB treatments are used primarily to
    a. provide hydration
    b. soothe pulmonary irritation.
    [✓ c.] improve ventilation.
    d. administer medications.

27. Constant nursing attendance may be required for the patient with a tracheotomy primarily because
    [✓ a.] there will be increased secretions requiring frequent suctioning.
    b. of the patient's inability to speak.
    c. the family usually requests it.
    d. the patient fears being left alone.

28. Postoperative coughing for patients with chest surgery is facilitated by
    1. preoperative teaching.
    2. withholding pain medication.
    3. supporting the patient on the unaffected side by pillows.
    4. sitting the patient upright.
    5. splinting the incision.

    a. 2,3,5
    [✓ b.] 1,4,5
    c. 1,2,3
    d. 1,2,5

29. The most serious complications, immediate or long-term, of a radical neck dissection is
a. infection along the suture line.
[✓ b.] carotid hemorrhage.
c. fistula formation.
d. graft necrosis.

30. The first thing to do if carotid hemorrhaging occurs is
a. apply immediate pressure over the vein.
[✓ b.] apply immediate pressure over the artery.
c. notify the physician.
c. suction the trach to avoid aspiration of blood.

31. The purpose of a cuff on a trach tube is
[✓ a.] to prevent aspiration.
b. to keep the trach tube in place.
c. to facilitate suctioning.
d. to insure patency of the airway.

32. It is extremely important that the nurse caring for a patient with an inflated cuff understand its purpose since misuse can cause
a. mucous plugs.
[✓ b.] tracheal necrosis.
c. dehiscence of the suture line.
d. drying out of the tracheobronchial tree.

33. The semi-Fowler's position in postoperative period is maintained to
a. reduce facial edema.
b. promote drainage of mucus.
c. facilitate respiration.
[✓ d.] all of these.

34. Heated nebulization is usually ordered for these patients in order to
a. increase their production of mucus.
[✓ b.] liquify the mucous secretions.
c. decrease the mucous secretions.
d. both b and c.

35. Encouraging coughing for a laryngectomy is very important since
a. coughing is very frightening for them.
b. many of them have chronic lung problems.
c. pulmonary complications can occur.
[✓ d.] all of these.

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Competencies

Unit III: Cardiovascular Problems

A. Cardiovascular Assessment
1. List the dominant cardiac risk factors
2. Locate the following peripheral arterial pulses
    a. carotid
    b. brachial
    c. radial
    d. femoral
    e. popliteal
    f. posterior tibial
    g. dorsalis pedis
3. State the normal response to testing for capillary filling
4. Give 2 causes of pallor, 1 cause of mucosal cyanosis, and 2 causes of cyanosis of the skin and nail beds
5. Distinguish between the causative mechanisms of edema relieved by gravity and pitting edema
6. Describe the changes which will occur in the blood count in bacterial endocarditis, intracardiac shunts, and myocardial infarction
7. Recall the normal range for the Partial Thromboplastin Time (PTT) and why this test is performed on patients receiving heparin
8. State what is determined by the Prothrombin Time, why this is done on patients on anticoagulant therapy, what the normal range is, and what the therapeutic range may be
9. Describe the relationship between cardiac disease and tests of kidney function such as urinalysis and Blood Urea Nitrogen (BUN)
10. Recognize the normal ranges for Serum Triglycerides and Serum Cholesterol
11. Recall that, of the "cardiac" enzymes CPK increases early following infarction, LDH levels peak about 12 hours after infarction, and that SGOT increases within 24 hours
12. Describe how the Erythrocyte Sedimentation Rate (ESR) is used to monitor the progress of patients with inflammatory heart conditions
13. Match the sequence of events in the cardiac cycle with the appropriate part of the P,Q,R,S, and T waves and the PR interval and ST segment of the ECG
14. Detail how venous pressure may be determined and name 2 conditions in which this is useful
15. State the significance of a high or rising Central Venous Pressure (CVP) as well as a low or falling CVP
16. List 2 conditions in which elevation of Pulmonary Artery Pressure (PAP) may occur and 2 conditions in which an elevated Pulmonary Capillary Wedge Pressure(PCWP) may result

17. Explain what is represented by the Pulmonary Capillary Wedge Pressure (PCWP)
18. Describe the post-examination nursing care of patients undergoing cardiac catheterization, arteriography and angiography
19. Define echocardiogram and list three cardiac conditions which it may detect
20. State the significance of paroxysmol nocturnal dyspnea and 3 pillow orthopnea in a patient with congestive heart failure
21. Relate 3 major teaching needs of a patient being discharged with congestive heart failure.
22. Describe 4 nursing measures to prevent thrombophlebitis after surgery
23. Name 3 causes of secondary hypertension
24. Describe 3 disruptions of blood that effect white, red, and platelet cell counts

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Student Competency Sheet

Unit III: Cardiovascular Problems
Module A: Cardiovascular Assessment

Competency: 1. Collect data about the patient's cardiovascular status which can be used to identify patient problems and for evaluating desired patient outcomes.
2. Recognize signs of alterations in cardiac function which require nursing intervention.

Performance Objectives: Given a series of items, about patients cardiovascular status, the student will identify the purpose of the assessments, normal ranges and responses, significance of abnormal findings, and nursing care during assessment.

Learning Activities:

_______ 1. Read Shafer's pp. 399-407.

_______ 2. Read Long, Nancy. "How to See Your Patient Safely Through an Angiogram," RN, Vol. 41, No. 10 (October, 1978), pp. 60-62.

_______ 3. Complete assessment sheet including definition, normal values, purpose and significance of test, and related nursing care.

Evaluation: Completes cardiac assessment sheet with 75% accuracy.

Extended Learning Activities: Using a client's history in the clinical setting, identify the abnormalities according to the assessment sheet in Module A.

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ASSESSMENT FOR ABNORMAL CARDIAC FUNCTION

Unit III: Cardiovascular Problems

Fill in columns with data where appropriate.

Assessments	Purpose of assessment	Normal Range	Significance of abnormality	Nursing Care
Heart & Circulation:				
Aprical-Radial Pulses				
Circulation Time				
PMI				
Peripheral Pulse Quality				
Capillary Filling Time				
Pulse Pressure				
Cyanotic Areas				
Extremity signs of decreased circulation				
PAP				
PWP				
CVP				
Respiratory				
LVEDP				
DOE				
SOB				
PND				
3 Pillow Orthopnea				
Rales/Rhonchi				
Other Assessments:				
Urinary Output				
Nocturia				
Chest Pain				
Sensorium Signs				
Activity Level				

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Teachers Guide

Unit III: Cardiovascular Problems
Module A: Cardiovascular Assessment

AudioVisuals:

1. Concept Media: Physical Assessment of the Heart and Lungs, #5 "Initial Assessment of the Heart".
2. Teacher-made Transparencies: "The ECG Pattern" (3) "Quiz on ECG Patterns" (2), ""Typical Enzyme Elevations After MI", Position of the Swan-Ganz Catheter".

Bibliography:

1. ____________________ Electrocardiography: A Better Way. Milton, Wis., The Burdick Corporation, 1976.
2. Meltzer, Laurence, et.al. Intensive Coronary Care: A Manual for Nurses, 3rd. ed. Bowie, Md.: The Charles Press, 1977.
3. Phibbs, Brendan. The Human Heart: A Guide to Heart Disease, 4th ed. St. Louis: The C.V. Mosby Company, 1979.
4. "Assessing Vital Functions Accurately: Nursing Skillbook '78.

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Student Competency Sheet

Unit III: Cardiovascular Problems
Module B: Problems of the Heart and Major Blood Vessels

Competencies:
1. Explain the clinical picture in inflammatory, valvular disease, arrythmias, congestive heart failure and aneurysms.
2. Describe nursing interventions for persons with these problems of the heart and major blood vessels.

Performance Objectives: Given a series of items concerning patients with problems of the heart and major blood vessels, the student will identify patient problems, relevant goals, and appropriate nursing interventions.

Learning Activities:

_____ 1. Read Shafer's pp. 407-444.

_____ 2. Choose one article from below to read and summarize:

Cromwell, Violet, et.al., "Understanding the Needs of Your Coronary Bypass Patient,", Nursing 80, Vol. 10, No. 3 (March 1980), pp. 34-41.
Dracup, K. "Infective Endocarditis" Nursing 80, (May) p. 44.
Derrick, H. Fred, "How Open Heart Surgery Feels," AJN, Vol. 79 No. 2 (Feb., 1979), pp. 277-285.
Long, G. "Managing Abdominal Aortic Aneurysm", Nursing 78 (Aug.) p. 21-27.
Heggie, Judith. "Pulling Your Patient Through Congestive Heart Heart Failure,", RN, Vol. 43, No. 9 (Sept. 1980), pp. 30-36.
Puska, N., "All About Sex.... After a Coronary," AJN, Vol. 77 No. 4 (April, 1977), pp. 602-605.
Stanford, Janet, et.al. "Antiarrhythmia Drug Therapy," AJN, Vol. 80, No. 7 (July 1980), pp. 1288-1295.

Evaluation: Writes 3 appropriate problems, goals and nursing interventions for a given cardiac problem. Submits article summary.

Enrichment Activities:

_____ 1. Read ____________________ "Patient Assessment: Pulses, " AJN, Vol. 79, No. 1 (Jan., 1979), pp. 115-132 (programmed instruction).

_____ 2. Read ____________________ "Hypertension, "AJN, Vol. 80, No. 5, (May 1980), pp. 925-942.

_____ 3. Read Dracup, "Unraveling the Mysteries of Cardiomyopathy," Nursing 79, Vol. 9, No. 5 (May 1979), pp. 84-87.

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Teachers Guide

Unit III: Cardiovascular Problems
Module B: Heart and Major Blood Vessels

Bibliography:

Nursing Skillbook; "Helping Cancer Patient's Effectively: Leukemia", 1978 p. 157.

Nursing Skillbook; "Giving Cardiovascular Drugs Safely".

Nursing Skillbook; "Assessing Vital Functions Accurately".

Nursing Skillbook; "Nursing Critically Ill Patiets Confidently" (ICU; Cardiogenic Shock, Postoperative Recovery, DIC).

Programmed Instruction: "Congestive Heart Failure", AJN, Jan. 1981, p. 119.

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Student Competency Sheet

Unit III: Cardiovascular Problems
Module C: Myocardial Infarction

Competency: Complete questions on a case study for a patient experiencing an myocardial infarction.

Performance Objective: on completing a case study the student will:

1. Describe the etiological factors that contribute to the development of coronary artery disease.
2. Identify interventions for a patient experiencing an acute MI.
3. Design a health teaching plan that will assist a patient and his family to apply principles of cardiac rehabilitation.

Suggested Learning Activities:

_______ 1. Complete case study referring to textbooks as a resource.

_______ 2. Provide nursing care to a patient in the hospital setting - either recuperating from an MI or a patient that requires cardiac teaching.

_______ 3. Read Shafer's 439-444.

Evaluation: Completes case study with 75% accuracy. Identifies appropriate problems of a cardiac patient in hospital setting.

Extended Learning Activities:

Visit a CCU to observe a nurse's role and review standard admission protocol.

Visit a rehabilitation program for cardiac patient provided by the AHA or hospital sponsored.

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CASE STUDY - Myocardial Infarction

William Shor, 53, business executive for a large company has been vying for a vice-president position for 6 months. He is accepted on an acting basis to see if he can reduce company expenditures by 20%. His wife and son see very little of him since he needs to put all of his time into his job. William was at work at his desk when he felt a sudden chest pain that took his breath away. After 30 minutes he walked to the company nurse's office for an "indigestion" medicine. The nurse evaluated:

Chest pain, non radiating
P-96 - irregular BP - 116/62 R-32, shallow
Lungs - clear
c/o nausea
His history shows BP-142/88 P-78 - regular Wt. 100Kg
EKG-N Smokes: 2 pk/day

Study Questions: What are the most common risk factors with MI?
List 7 signs and symptoms of an MI and the physiological causes.
What are the effects of smoking on the coronary arteries?
On what findings is a diagnosis of MI made?
How can the nurse decrease his anxiety?
Give the rationale for the following actions of the nurse:

Action	Rationale
1. Loosen clothing	
2. Semi-Fowler's	
3. Nasal O_2	
4. V.S. q15 min.	
5. Morphine Sulfate	

William is admitted to CCU and placed on an EKG monitor. The lab tests indicate the following results. Fill in normal values and possible cause of abnormalities:

Test	William's Values	Normal	Causes
LDH	125U (Wacker)		
SGOT	98U (Karmen)		
CPK	380U		
WBC	17,000		
ESR	24mm		
Cholesterol	250mg.		
Alk Phosp	25U		
Temp.	38.5°C		

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William is having occasional PVC's, still has chest pain, BP 100/60 and has developed five rales in lower lung base. He has ordered:

Dopamine 2 amp in 500 ml 5-DW to maintain BP>100
M.S. IV q4° PRN
Ledocaine 100mg IVP for PVC>6/min
Lanoxin 0.25 mg. qd
Lasix 20 mg IV
Decumaral 250 mg qd
Kaon 5cc BD
Protime qd

His intake and output record showed:

	Intake		Output
Time	Oral	IV	Urine
12N - 3pm	30	240	200
3pm - 11pm	30	850	350
11pm - 7am	-	750	400

List the nursing care priorities for William. What is the rationale for each?
What items should be discussed with Mrs. Shor before she visits? Place in order order of priority they should be presented. What would you explain about each?
What is the difference between an initial dose and a maintenance dose (i.e digestion, dicumarol)?
Why is a PT done daily?
How does the output compare to Intake? Explain.

The nurses need to observe for potential complications of MI. Fill in the following grid.

Complication	Clinical Signs	Treatment	Nsg. Intervention

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Discuss the uses of heparin and dicumarol for patients with MI. What are the nursing responsibilities?
Why are Kaon & Lanoxin being administered together?
William is placed on a 1000mg sodium diet. What major food should be avoided?
Design a rehabilitation teaching plan for William and his wife.

Goal	Objective	Content of Teaching	Evaluation
His Condition			
Diet			
Drugs			
PT			
Occupation			
Activities			
Sexual Activity			
Life Style			

Teachers Guide

Unit III: Cardiovascular Problems
Module C: Caring For The Patient with Myocardial Infarction

Teachers Note:

1. Discuss current rehabilitation programs for cardiac patients.

Bibliography:

Wardell; *Acute Intervention*: "Type A Behavior: MI" p. 979, p. 284 (case study).

Phipps; *Patient Care Studies*, "A Man With Possible MI", 1972, p. 41.

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Student Competency Sheet

Unit III: Gas Transport Problems Peripheral Circulation
Module D: Thrombophlebitis

Competency: Assessment of peripheral circulation.

Performance Objective: The student will identify assessments and nursing measures for a patient with thrombophlebitis.

Suggested Learning Activities:

Read:

_______ 1. Shafer's pp. 462-464.

_______ 2. Nyman, Jo. "Thrombophlebitis in Pregnancy", AJN (Jan. 1980) p. 90-93.

_______ 3. Answer study guide questions.

Evaluation: Completes study guide questions with 75% accuracy.

Extended Learning Activities:

Formulate a care plan for a patient being discharged with thrombophlebitis and receiving anticogulation therapy.

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Study Guide

Unit III: Gas Transport Problems
Module D: Thrombophlebitis

Directions: Answer questions using your textbook as a resource.

Part I:

1. List 4 symptoms that a patient may give with thrombophlebitis of a deep vein in the leg.

2. A simple test for thrombophlebitis in the calf is called ______________________ sign.

3. Define: thrombophlebitis - ______________________

   phlebothrombosis - ______________________

4. 2 complications from thrombophlebitis that must be observed for in the patient are ______________________ and ______________________.

5. List 4 measures the nurse will likely institute in caring for this patient.

6. Patients susceptible to thrombophlebitis are
   1. the elderly
   2. patients with infection
   3. patients with heart disease
   4. patients dehydrated

   A. 1,2
   B. 1,3
   C. 2,3
   D. all of above

7. Thrombophlebitis and phlebothrombosis can be prevented by
   A. changing position frequently and exercising legs.
   B. taking vasodilating drugs and wearing support hose.
   C. stopping smoking and following low sodium diet.

8. A patient with thrombophlebitis complain with a leg cramp and asks to have the leg massaged to relieve the spasm. You would
   A. massage the leg.
   B. not massage the leg.

9. The rationale for the answer you gave in #8 is
   A. leg cramps cause anxiety which effects the cardiovascular system and should therefore be relieved by massage.
   B. massage may dislodge a clot causing emboli therefore should be avoided.

10. If an embolus suddenly occludes a large artery in the leg it will:
    1. be a deep red color
    2. appear white
    3. be painful
    4. feel cold
    5. feel warm

    A. 1,2,4
    B. 1,3,5
    C. 2,3,4
    D. 3 only

11. Predisposing conditions to pulmonary embolism are
    1. prolonged bedrest
    2. fracture/trauma to extremity
    3. recent surgery
    4. thrombophlebitis/phlebothrombosis
    5. post partum state

    A. 1,2,5
    B. 1,3,4
    C. 2,3,4
    D. all of above

12. Symptoms of pulmonary embolism include
    1. hemoptysis
    2. bradycardia
    3. Cheyne-Stokes respiration
    4. chest pain
    5. dyspnea

    A. 1,2,3
    B. 1,4,5
    C. 2,3,4
    D. all of above

13. Heparin anticoagulation therapy is beneficial by which action?
    A. Prolongs bleeding time.
    B. Increases clotting time.
    C. Improves fibronolytic activity.
    D. Promotes lyses of existing clots.

14. Vasodilating drugs are beneficial by all except
    A. relieves vessel spasm.
    B. prevents further thrombin formation.
    C. improves circulation.
    D. increases absorption of thrombus.

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Teachers Guide

Unit III: Gas Transport Problems
Module D: Thrombophlebitis

Bibliography:

Tucker, et. al. "Patient Care Standards", 1980, Mosby, p.39.
Nyman; "Thrombophlebitis in Pregnancy "AJN" January 1980, p. 90.

Study Guide Key:

1. pain
   edema
   redness
   heat
   chills
   temperature elevation
   bluish-white color
2. Homan's
3. Inflammation of a vein with clot formation.
4. Pulmonary Embolism, M.I., CVA.
5. Rest, restrict a client
   warm moist heat/ice
   elevate limb, prevent stasis
   elastic stockings
   anticoagulation therapy
   measure limb
   check peripheral pulses and circulation
6. D
7. A
8. B
9. B
10. C
11. D
12. B
13. B
14. B

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Unit III Cardiovascular Assessment
Competency Exam

Circle the best answer.

1. Angina pectoris is a type of heart disease in which there is
   a. an inflammation of th heart muscle.
   b. a decrease in the blood supply to the heart muscle.
   c. formation of a blood clot in one of the heart's chambers.
   d. a sudden increase in the rate of the heartbeat.

2. The outstanding symptom of angina pectoris is
   a. cyanosis.
   b. elevation of the blood pressure.
   c. pain in the chest radiating down the left arm.
   d. acute pain often mistaken for indigestion.

3. The symptoms of angina pectoris are caused by a(n)
   a. increase of blood flowing through the coronary arteries.
   b. decrease of blood to the myocardium.
   c. increase of blood to the myocardium.
   d. decrease of blood to the pulmonary artery.

4. Angina pectoris is treated with nitroglycerin which has the effect of
   a. stimulating respirations.
   b. relaxing the muscles of the chest.
   c. relieving pain by depressing the central nervous system.
   d. dilating the blood vessels.

5. The most common cause of death from heart disease after the age of 40 is
   a. congenital malformation.
   b. infection.
   c. coronary artery disease.
   d. angine pectoris.
   e. atrial fibrillation.

6. Atherosclerosis may be caused by
   a. cholesterol deposits along the arterial walls.
   b. too much carbohydrate in the diet.
   c. a decrease in protein intake.
   d. an unbalanced diet.

7. The cause of an acute myocardial infarction is
   a. a sudden blocking of one of the brances of the coronary artery.
   b. overactivity of the myocardium.
   c. overexertion.
   d. weakening of the aortic wall.

8. An occlusion of the coronary arteries leads to death of some of the cells of the myocardium. The myocardium is the
   a. major blood vessel of the heart.
   b. sac surrounding the heart.
   c. wall separating the chambers of the heart.
   d. muscular tissue of the heart.

9. A condition that may be associated with coronary artery disease and occur as a later complication
   a. Rheumatic fever.
   b. Atherosclerosis.
   c. Congestive heart failure.
   d. Hypertensive heart disease.

Mr. John Jones, a 65-year-old retired executive, had a myocardial infarct ten years ago. One evening he had chest pain resembling the pain he experienced his last attack. He went to the nearest emergency room.

1. If this is a second myocardial infarct, what will the chest pain Mr. Jones has be like?
   a. Squeezing, heavy discomfort.
   b. Crushing, vise-like, gripping.
   c. Sharp, intermittent, made worse by swallowing.
   d. Stabbing, knife-like.

2. Mr. Jones appears very worried in the ER. What is probably contributing most to his anxiety?
   a. Fear of a loss of physical activity.
   b. Fear of being in the hospital a long time.
   c. Memory of his previous hospital experiences.
   d. Fear of imminent death.

Mr. Jones is admitted to the Coronary care unit with a diagnosis of myocardial infraction. He is placed on the monitor.

3. Mr. Jones is in cardiogenic shock; which of these physiologic changes occur first?
   a. Increased cardiac output and tissue hypoxia.
   b. Elevated serum enzymes.
   c. Decreased cardiac output and tissue hypoxia.
   d. Increased extracellular and intracelluar ratio of fluid.

4. An important nursing goal in caring for Mr. J. in the coronary care unit is to convey to him that
   a. his past experiences are related to his present condition.
   b. he will soon be able to continue his normal activity.
   c. his cooperation may help an early recovery.
   d. we will care for him completely.

5. When patients are seriously ill we might expect them to
   a. not be concerned with the hospitalization but worry about their responsibilities left at home.
   b. exhibit a morbid sense of humor.
   c. be angry.
   d. regress to a lower level of basic needs.

Mr. Jones developes premature ventricular contractions, and lidocaine is given.

6. The expected effect of the lidocaine is
   a. increased stimulation of the S-A node.
   b. increased stimulation of the bundle of his.
   c. decreased conduction of the hearts electrical system.
   d. decreased myocardial irritability.

7. Since this is Mr. Jones second myocardial infarct, what signs and symptoms of cardiac decompensation would be most important to observe for?
   a. Dependent edema, shortness of breath, and weight gain.
   b. Drop in blood pressure, bradycardia, and restlessness.
   c. Elevated systalic pressure, elevated temperature, and cargiogenic shock.
   d. Weight loss, widening pulse pressure, and myocardial irritability.

8. Mr. Jones exhibits signs of hypokalemia. The following effects may be noted
   a. arrhythmias, weakened myocardium, and cardiac arrest.
   b. weakness, fatigue, confusion, coma.
   c. numbness and tingling in the fingertips, toes, and ears.
   d. muscle cramps and tetany.

9. Mr. Jones will be discarged on a low-sodium diet and a diuretic. The nurse should teach Mr. Jones to recognize signs of which electrolyte problems?
   a. Sodium depletion and potassium retention.
   b. Sodium loss and calcium retention.
   c. Potassium and sodium depletion.
   d. Potassium and sodium retention.

10. Mr. Wood, age 64, is assigned to you for morning care. His diagnosis is congestive failure.
    Congestive failure is best described as a heart condition in which there is
    a. an abnormality in the structure of the heart.
    b. a decreased flow of blood through the heart and great vessels resulting from failure of the heart to function as a pump.
    c. a result of the formation of a blood clot within one of the heart chambers.
    d. a sudden spasm of the heart muscle due to a decreased blood supply.

11. Mr. Wood's doctor ordered complete bed rest for him. This means that the patient
    a. is encouraged to rest as much as possible.
    b. is confined to bed but can assume responsibility for much of his personal care.
    c. is confined to bed but is allowed to get up to go to the bathroom as necessary.
    d. must remain as quiet as possible, and everything involving the slightest physical effort must be done for him.

12. Mr. Wood is suffering from severe dyspnea; the position in which he would most be comfortable is
    a. Sims' left lateral.
    b. Fowler's position.
    c. Trendelenburg position.
    d. Supine.

13. Mr. Wood was given a low-sodium diet. When edema is present the intake of sodium is restricted because sodium
    a. slows the heartbeat.
    b. causes hardening of the arteries.
    c. increases urinary output.
    d. holds fluid in the tissues.

14. Mr. Wood's doctor placed him on digitalis. The drug is classified as a
    a. depressant.
    b. cardio-tonic.
    c. coagulant.
    d. respiratory stimulant.

15. The chief action of digitalis is to
    a. lower the blood pressure.
    b. prevent the formation of blood clots.
    c. increase the pulse rate.
    d. slow and strengthen the heartbeat.

16. Before each dose of digitalis is administered to the patient, the nurse must remember to
    a. count the patient's pulse.
    b. count the patient's respirations.
    c. take the patient's blood pressure.
    d. check with the laboratory to see if a test of bleeding time has been done.

17. In planning the nursing care for a patient with congestive heart failure, your must consider
    a. activity, skin care, diet, and rest.
    b. prevention of infection, prevention of deformities and proper rest.
    c. maintenance of nutrition by giving high caloric foods, prevention of deformities and skin care.
    d. early ambulation, early rehabilitation and good skin care.

18. The nurse caring for a patient with left sided congestive failure should particularly observe for signs of
    a. fatigue.
    b. restlessness.
    c. oxygen need.
    d. pulmonary edema.

19. Specific nursing care for the congestive heart failure patient may include
    a. limiting of fluid intake and low-sodium.
    b. regular exercise.
    c. increasing fluid intake and a low-sodium diet.
    d. increasing fluid intake and a salt diet.

20. Mrs. S. is hospitalized for recurrent pneumonia and a myocardial infarction. Currently she has an oral temperature of 100° and complains of right calf pain. Which of the following is most appropriate?
    a. Administer Demerol.
    b. Check the client's vital signs.
    c. Check for presence of pedal pulses.
    d. Check for presence of Homan's sign.

21. Thrombophlebitis is a complication of a variety of illnesses and can best be avoided by
    a. early ambulation and exercises to increase circulation.
    b. administration of antibiotics.
    c. giving the patient daily doses of vitamin K.
    d. restricting physical activity of any kind after surgery.

22. Ms. G. has thrombophlebitis of left leg. She is receiving heparin 5,000 U IV q4h. Which of the following will the nurse include in the information given to Ms. G. regarding the use of heparin?
    1. Helps to dissolve preformed thrombi.
    2. Prevents further extension of thrombi.
    3. Attempts to thin the blood to prevent further clot formation.
    4. Blocks thrombi eventually forming into fibrin.

    a. 1,2
    b. 1,3
    c. 3 only
    d. 2,4
    e. all of above

Mr. Moore is an outpatient who receives regular treatment for anteriosclerosis of his lower extremities. On one of his visits to the clinic Mr. Moore seems anxious to discuss his condition with you. His first questions is "Why has the doctor told me to stop smoking? How can that affect my condition? It's my legs that bother me, not my lungs."

(This information pertains to the following five questions)

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    b. nicotine, which is present in cigarettes, is a drug and it narrows the blood vessels in the body and makes your condition worse.
    c. smoking dulls the appetite and you are not eating properly - this prevents the healing of your legs.
    d. there is really no connection between your smoking and your present illness, but you would feel better if you stopped smoking.

24. While you are talking to Mr. Moore you might take this opportunity to teach him some important facts regarding proper care of his feet and legs. These include
    a. avoid extreme cold and be sure to wear warm clothing during cold weather.
    b. be very careful about applying heat to yourself without feeling it.
    c. do not elevate your lower extremities above the level of the heart.
    d. wear tight shoes and garters because this helps keep the blood from collecting in the lower extremities.

    a. all of these
    b. all but 3
    c. 3 and 4
    d. 1 and 2

25. The most common symptom of thrombophlebitis is
    a. cyanosis of the affected extremity.
    b. pain in the calf of the leg.
    c. severe swelling of the ankles.
    d. bulging of the affected blood vessels.

26. A nursing measure that is contraindicated in thrombophlebitis is
    a. turning the patient from side to side.
    b. elevating the head of the bed.
    c. massaging the legs.
    d. rubbing the back.

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    b. carditis.
    c. myocarditis.
    d. pericarditis.

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    b. is called an aneurysm.
    c. is not unusual in older people.

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    a. bowel sounds and bowel continence.
    b. comparison of BP and P in right and left arms.
    c. motor function of the lower extremities.
    d. urinary output and renal function tests.

31. Appropriate nursing actions noting the absence of fluid or bubbling fluctuation on the tube in a closed chest drainage system would include all of the following except
    a. check amount of suction.
    b. have client cough.
    c. irrigate drainage system.
    d. milk the tubing.

32. Mr. Ray, with severe agina is admitted for double coronary artery bypass surgery using his saphenous vein. In planning his nursing care for rehabilitation, it is important to know that
    a. the entire myocardium receives an increased supply of oxygenated blood.
    b. the greatest potential effect is not seen for 3-6 months.
    c. cause of coronary artery disease has not been altered.
    d. angina can be expected post op but to a lesser degree.

33. Mr. Fells is admitted for cardiac catheterization in A.M. Before explaining the test procedures, which of the following assessments has the least priority?
    a. Past history of cardiac problems.
    b. Knowledge and understanding of the test.
    c. Presence of overt and covert anxiety.
    d. Future data for cardiac surgery.

34. Mr. Fells returns from cardiac catheterization and the nurse checks his vital signs and pedal pulse. She can not detect a pedal pulse on the operative side. The next best action is to
    a. call the doctor.
    b. take the apical rate.
    c. check the operative sight.
    d. ask him to move his toes.

35. All of the following are complications of right heart catheterization except
    a. bleeding from the catheter insertion site.
    b. pulmonary embolus.
    c. hemiparesis.
    d. tamponade.
    e. ventrical fibrillation.

36. Hypovolemia is a condition common to various forms of shock. Which of the following parameters apply to hypovolemia?
    1. Urine output 25cc/hour.
    2. CVP 20 cm.
    3. Pulse pressure 40.
    4. Peripheral stasis.
    5. confusion

    a. 1,3,4
    b. 2,3,5
    c. 1,4,5
    d. all of the above

37. Which of the following conditions are stressors that may precipitate DIC?
    1. Nephrotic syndrome.
    2. Administering mis - matched blood.
    3. Diabetes mellitus.
    4. Abruptio placenta.
    5. Heat stroke.

    a. 1,5
    b. 2,4
    c. 2,4,5
    d. 3,4,5

38. Which of the following behaviors are important for the nurse to observe in caring for the client with DIC?
    1. Petechiae and ecchymosis.
    2. Bradycardia.
    3. Hematuria.
    4. Bone and joint pain.
    5. Decreased respiratory rate.

    a. 1,3,5
    b. 2,3,4
    c. 1,3
    d. 1,3,4

39. In caring for the client with DIC, all of the following are important except
    a. give necessary I.M. medications with small gauge needle and apply pressure at the site for 5 - 10 minutes.
    b. during A.M. care, shave with an electric shaver and use an electric toothbrush.
    c. when taking a BP, remove the cuff quickly and rotate the extremity site.
    d. instruct the client not to strain during a bowel movement

40. Mr. Jay with leukemia has had a sudden drop in his WBC's and is placed in Protective (Reverse) Isolation. All of the following actions are true except

1. a private room with the door closed at all times.
2. gown, gloves, and masks must be worn into the room.
3. sterile sheets and pillow cases.
4. nurses with respiratory infections should not care for him.
5. linens and trash should be double bagged to discard.

a. 4
b. 2 and 5
c. 3 and 4
d. 4 and 5

Wor-Wic Tech Community College Nursing Programs

Nur. 202

Unit III Cardiovascular Assessment
Competency Exam

Circle the best answer.

1. Angina pectoris is a type of heart disease in which there is
   a. an inflammation of th heart muscle.
   [✓ b.] a decrease in the blood supply to the heart muscle.
   c. formation of a blood clot in one of the heart's chambers.
   d. a sudden increase in the rate of the heartbeat.

2. The outstanding symptom of angina pectoris is
   a. cyanosis.
   b. elevation of the blood pressure.
   [✓ c.] pain in the chest radiating down the left arm.
   d. acute pain often mistaken for indigestion.

3. The symptoms of angina pectoris are caused by a(n)
   a. increase of blood flowing through the coronary arteries.
   [✓ b.] decrease of blood to the myocardium.
   c. increase of blood to the myocardium.
   d. decrease of blood to the pulmonary artery.

4. Angina pectoris is treated with nitroglycerin which has the effect of
   a. stimulating respirations.
   b. relaxing the muscles of the chest.
   c. relieving pain by depressing the central nervous system.
   [✓ d.] dilating the blood vessels.

5. The most common cause of death from heart disease after the age of 40 is
   a. congenital malformation.
   b. infection.
   [✓ c.] coronary artery disease.
   d. angine pectoris.
   e. atrial fibrillation.

6. Atherosclerosis may be caused by
   [✓ a.] cholesterol deposits along the arterial walls.
   b. too much carbohydrate in the diet.
   c. a decrease in protein intake.
   d. an unbalanced diet.

7. The cause of an acute myocardial infarction is
   [✓ a.] a sudden blocking of one of the brances of the coronary artery.
   b. overactivity of the myocardium.
   c. overexertion.
   d. weakening of the aortic wall.

8. An occlusion of the coronary arteries leads to death of some of the cells of the myocardiu. The myocardium is the
   a. major blood vessel of the heart.
   b. sac surrounding the heart.
   c. wall separating the chambers of the heart.
   [✓ d.] muscular tissue of the heart.

9. A condition that may be associated with coronary artery disease and occur as a later complication
    - a. Rheumatic fever.
    - b. Atherosclerosis.
    - [✓ c.] Congestive heart failure.
    - d. Hypertensive heart disease.

Mr. John Jones, a 65-year-old retired executive, had a myocardial infarct ten years ago. One evening he had chest pain resembling the pain he experienced his last attack. He went to the nearest emergency room.

1. If this is a second myocardial infarct, what will the chest pain Mr. Jones has be like?
    - a. Squeezing, heavy discomfort.
    - [✓ b.] Crushing, vise-like, gripping.
    - c. Sharp, intermittent, made worse by swallowing.
    - d. Stabbing, knife-like.

2. Mr. Jones appears very worried in the ER. What is probably contributing most to his anxiety?
    - a. Fear of a loss of physical activity.
    - b. Fear of being in the hospital a long time.
    - c. Memory of his previous hospital experiences.
    - [✓ d.] Fear of imminent death.

Mr. Jones is admitted to the Coronary care unit with a diagnosis of myocardial infraction. He is placed on the monitor.

3. Mr. Jones is in cardiogenic shock; which of these physiologic changes occur first?
    - a. Increased cardiac output and tissue hypoxia.
    - b. Elevated serum enzymes.
    - [✓ c.] Decreased cardiac output and tissue hypoxia.
    - d. Increased extracellular and intracelluar ratio of fluid.

4. An important nursing goal in caring for Mr. J. in the coronary care unit is to convey to him that
    - a. his past experiences are related to his present condition.
    - b. he will soon be able to continue his normal activity.
    - [✓ c.] his cooperation may help an early recovery.
    - d. we will care for him completely.

5. When patients are seriously ill we might expect them to
    - a. not be concerned with the hospitalization but worry about their responsibilities left at home.
    - b. exhibit a morbid sense of humor.
    - c. be angry.
    - [✓ d.] regress to a lower level of basic needs.

Mr. Jones developes premature ventricular contractions, and lidocaine is given.

6. The expected effect of the lidocaine is
    a. increased stimulation of the S-A node.
    b. increased stimulation of the bundle of his.
    [✓ c.] decreased conduction of the hearts electrical system.
    d. decreased myocardial irritability.

7. Since this is Mr. Jones second myocardial infarct, what signs and symptoms of cardiac decompensation would be most important to observe for?
    [✓ a.] Dependent edema, shortness of breath, and weight gain.
    b. Drop in blood pressure, bradycardia, and restlessness.
    c. Elevated systalic pressure, elevated temperature, and cargiogenic shock.
    d. Weight loss, widening pulse pressure, and myocardial irritability.

8. Mr. Jones exhibits signs of hypokalemia. The following effects may be noted
    [✓ a.] arrhythmias, weakened myocardium, and cardiac arrest.
    b. weakness, fatigue, confusion, coma.
    c. numbness and tingling in the fingertips, toes, and ears.
    d. muscle cramps and tetany.

9. Mr. Jones will be discarged on a low-sodium diet and a diuretic. The nurse should teach Mr. Jones to recognize signs of which electrolyte problems?
    a. Sodium depletion and potassium retention.
    b. Sodium loss and calcium retention.
    [✓ c.] Potassium and sodium depletion.
    d. Potassium and sodium retention.

10. Mr. Wood, age 64, is assigned to you for morning care. His diagnosis is congestive failure.
    Congestive failure is best described as a heart condition in which there is
    a. an abnormality in the structure of the heart.
    [✓ b.] a decreased flow of blood through the heart and great vessels resulting from failure of the heart to function as a pump.
    c. a result of the formation of a blood clot within one of the heart chambers.
    d. a sudden spasm of the heart muscle due to a decreased blood supply.

11. Mr. Wood's doctor ordered complete bed rest for him. This means that the patient
    a. is encouraged to rest as much as possible.
    b. is confined to bed but can assume responsibility for much of his personal care.
    c. is confined to bed but is allowed to get up to go to the bathroom as necessary.
    [✓ d.] must remain as quiet as possible, and everything involving the slightest physical effort must be done for him.

12. Mr. Wood is suffering from severe dyspnea; the position in which he would most be comfortable is
    a. Sims' left lateral.
    [✓ b.] Fowler's position.
    c. Trendelenburg position.
    d. Supine.

13. Mr. Wood was given a low-sodium diet. When edema is present the intake of sodium is restricted because sodium
    a. slows the heartbeat.
    b. causes hardening of the arteries.
    c. increases urinary output.
    [✓ d.] holds fluid in the tissues.

14. Mr. Wood's doctor placed him on digitalis. The drug is classified as a
    a. depressant.
    [✓ b.] cardio-tonic.
    c. coagulant.
    d. respiratory stimulant.

15. The chief action of digitalis is to
    a. lower the blood pressure.
    b. prevent the formation of blood clots.
    c. increase the pulse rate.
    [✓ d.] slow and strengthen the heartbeat.

16. Before each dose of digitalis is administered to the patient, the nurse must remember to
    [✓ a.] count the patient's pulse.
    b. count the patient's respirations.
    c. take the patient's blood pressure.
    d. check with the laboratory to see if a test of bleeding time has been done.

17. In planning the nursing care for a patient with congestive heart failure, your must consider
    [✓ a.] activity, skin care, diet, and rest.
    b. prevention of infection, prevention of deformities and proper rest.
    c. maintenance of nutrition by giving high caloric foods, prevention of deformities and skin care.
    d. early ambulation, early rehabilitation and good skin care.

18. The nurse caring for a patient with left sided congestive failure should particularly observe for signs of
    a. fatigue.
    b. restlessness.
    c. oxygen need.
    [✓ d.] pulmonary edema.

19. Specific nursing care for the congestive heart failure patient may include
    [✓ a.] limiting of fluid intake and low-sodium.
    b. regular exercise.
    c. increasing fluid intake and a low-sodium diet.
    d. increasing fluid intake and a salt diet.

20. Mrs. S. is hospitalized for recurrent pneumonia and a myocardial infarction. Currently she has an oral temperature of 100^4 and complains of right calf pain. Which of the following is most appropriate?

    a. Administer Demerol.
    b. Check the client's vital signs.
    c. Check for presence of pedal pulses.
    [✓ d.] Check for presence of Homan's sign.

21. Thrombophlebitis is a complication of a variety of illnesses and can best be avoided by
    [✓ a.] early ambulation and exercises to increase circulation.
    b. administration of antibiotics.
    c. giving the patient daily doses of vitamin K.
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(This information pertains to the following five questions)

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    - d. instruct the client not to strain during a bowel movement

40. Mr. Jay with leukemia has had a sudden drop in his WBC's and is placed in Protective (Reverse) Isolation. All of the following actions are true except
    1. a private room with the door closed at all times.
    2. gown, gloves, and masks must be worn into the room.
    3. sterile sheets and pillow cases.
    4. nurses with respiratory infections should not care for him.
    5. linens and trash should be double bagged to discard.

    a. 4
    [✓ b.] 2 and 5
    c. 3 and 4
    d. 4 and 5

Competencies:

Unit IV: Endocrine Dysfunction

A. Caring For The Patient With Endocrine Problems
  1. Explain the principles of closed-loop feedback of endocrine hormone regulation using the thyroid gland as an example.
  2. Identify for each endocrine gland (adrenal, pituitary, thyroid, parathyroid, and pancreas) the following:
     - a. Functions of the hormone excreted.
     - b. Symptoms that occur with excess of deficit of the hormone.
     - c. Diagnostic tests used to identify imbalance.
     - d. Medications and treatments used to correct the imbalance.
     - e. Specific nursing interventions and assessments needed to care for the patient with dysfunction of each endocrine gland.

B. Caring For The Patient With Problems of The Liver
  1. Identify the signs and symptoms of cirrhosis and diagnositic tests used to evaluate liver function.
  2. Describe the effects of portal hypertension, ascites, and encephalopathy on the patient with liver damage.
  3. State specific nursing assessments and interventions for these complications in cirrhosis:
     Inadequate nutrition and metabolism
     Fluid and electrolyte imbalances
     Coagulation problems
     Decreased resistance to injection
     Inability to detoxify substances

C. Caring For The Patient With Problems of the Biliary System
  1. Identifys common symptoms of cholelithiasis.
  2. Demonstrate knowledge of biliary system function by explaining the presence of juandice with cholelithiasis.
  3. State common drugs used for pain in biliary colic and those to avoid.
  4. Relate significant nursing interventions in a patient having had a cholecystectomy.

Wor-Wic Tech Community College Nursing Program

Nur. 202

Student Competency Sheet

Unit IV: Nursing The Patient With Endocrine Dysfunction
Module A: Hyperthyroidism

Competency: Identify pertinent nursing interventions for patients with hyperthyroidism.

Performance Objectives: Given a patient case study in hyperthyroidism, the student will:

1. List diagnostic tests that would evaluate thyroid function.
2. State physical signs a hyperthyroid patient exhibits.
3. List 3 common medications that control thyroid activity.
4. Identify nursing care interventions for the hyperthyroid patient under treatment.
5. Describe the cause, effect, and treatment for a patient in thyroid crisis (storm).
6. Identify postoperative assessment of a patient who has had a sub-total thyroidectomy.

Learning Activities:

_______ 1. Read: Shafers, pp. 505-10.

_______ 2. Select an article on hyperthyroidism from a nursing journal to supplement textbook reading.

_______ 3. Write 3 drug cards on common thyroid medications.

Evaluation: Ability to complete performance objectives with 75% accuracy. Submits 3 drug cards on thyroid medication.

Extended Activities: Read "Adrenocortical Insufficiency", Programmed Instruction, AJN, June 1974.

Wor-Wic Tech Community College Nursing Programs

Nur. 202
Unit IV Endocrine Imbalance
Study Guide

1. Which glands secrete the following hormones?
   a. Cortisone
   b. TRH
   c. TSH
   d. T3
   e. Somatotropin
   f. ADH
   g. Glucagon
   h. Androgen

2. List 6 side effects of steroid therapy

   1.

   2.

   3.

   4.

   5.

   6.

3. Why must steroid medication, such as prednisone, be gradually decreased in dosage when patients have the drug discontinued?

4. What is adrenal crises?

5. What are important nursing assessments of a patient post-op with sub-total thyroidectomy?

Wor-Wic Tech Community College Nursing Programs

Nur. 202

Teachers Guide

Unit IV: Nursing the Patient With Endocrine Dysfunction
Module A: Hyperthyroidism

Teachers Note:

1. Compare and contrast hyperthyroid and hypothyroid physical effects using pictures that illustrate same.
2. Using a study guide on endocrine imbalance have students fill out and bring to class for discussion.
3. Key to Endocrine Imbalance Study Guide.

1). a. adrenal cortex
    b. hypothalmus
    c. pituitary
    d. thyroid
    e. anterior pituitary
    f. posterior pituitary
    g. pancreas (alpha)
    h. adrenal cortex

2) 1. masks infection
    2. osteoporasis
    3. diabetes
    4. peptic ulcer
    5. myopathy
    6. hypokalemia
    (hypertension, psych depression, capillary fragility)

3) Addisonian Crises from supression of adrenal and pituitary stimulation.

4) Circulatory collapse, hypotension, shock, death.

5) Bleeding
Respiratory obstruction
Vocal cord spasm
Tetany
Hypothyroid
Neck support

Nur. 202

Student Competency Sheet

Unit IV: Nursing The Patient With Endocrine Dysfunction
Module B: Pancreatic Dysfunction

Competency: Discuss the physical and emotional needs of patients with Diabetes Mellitus.

Performance Objective: Identify teaching needs for a patient with a new diagnosis of adult onset diabetes.

Learning Activities:

_______ 1. Read: Shafers pp. 511-525.

_______ 2. Attend lecture on pancreatic dysfunction.

_______ 3. Provide teaching to a diabetic patient in the clinical area.

_______ 4. Construct a care plan for a diabetic for prevention of complications from long term diabetes; include some emotional needs.

Evaluation: List complications commonly seen in diabetic patients (at least 7). Completion of a satisfactory care plan and diabetic assessment sheet.

Extended Activities:

_______ 1. Complete a diabetic assessment sheet for discharge planning on a diabetic in the clinical area.

_______ 2. Read "Managing Diabetics Accurately," Nursing Skillbook.

_______ 3. Select 2 articles from journals on diabetic care and write summaries on the content.

_______ 4. Attend a diabetic teaching class provided in the hospital setting.

Teachers Guide

Unit IV: Nursing the Patient With Endocrine Dysfunction
Module B: Pancreatic Dysfunction

Teachers Note:

1. A handout on adult-onset contrasted to juvenile-onset of diabetes.
2. Have students write their own definition for insulin shock, DKA, HHNK. Read in class various samples and compare accuracy of pathophysiology in definitions.
3. Provide classtime for a dietician to discuss guidelines for teaching diabetics meal planning.

Bibliography:

"Somogyi Effect", Nursing 79, (Feb.) p. 39.
"Managing Diabetics Accurately," Nursing Skillbook.
"Neuropathies", Nursing 80, (June).

Wor-Wic Tech Community College Nursing Programs

Nur. 202

Student Competency Sheet

Unit IV: Nursing The Patient With Endocrine Dysfunction
Module C: Liver Dysfunction

Competency: Identify pertinent nursing care for a patient with cirrhosis.

Performance Objectives: Given a patient with hepatic disease, the student will develop a plan of nursing care based on a clinical situation or classroom similation.

Learning Activities:

_______ 1. Read: Shafers pp. 534-44, 548-55.

_______ 2. Attend lecture on liver disease.

_______ 3. Take pre-test on liver disease.

_______ 4. Provide nursing care and develop a nursing care plan for a patient with liver disease in the clinical setting.

Evaluation: Achievement of 75% on Unit Exam. Satisfactory identification of needs, goals and nursing interventions in a nursing care plan.

Extended Activities:

_______ 1. Discuss exam questions after testing for appropriate principles of nursing care.

_______ 2. Read: Hayter, "Impaired Liver Function and Related Nursing Care," AJN, November 1968, p. 2374.

_______ 3. View Trainex PC 201 - Fluid Retention - Edema.

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Teachers Guide

Unit IV: Nursing The Patient With Endocrine Dysfunction
Module C: Liver Dysfunction: Cirrhosis

Teachers Note:

1. Review for students in the beginning the various functions of the liver to aide them in identifying symptoms and complications in liver disease.
2. Administer pre-test before lecture to help student focus on content of lecture and also to make them aware of their own learning needs. (not incorporated in grades).

Key to pretest: Liver Function

1. D
2. E
3. C
4. C
5. D
6. C
7. C
8. A
9. B
10. C
11. B
12. D
13. D
14. A
15. B

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Unit IV: Endocrine Dysfunction
Pretest on Liver Function

1. The liver stores
   1. glycogen
   2. vitamins
   3. iron, copper
   4. protein

   A. 1,2
   B. 1,3,4
   C. 1,3
   D. 1,2,3,4

2. Glucose can be manufactured by the liver from
   A. proteins
   B. fats
   C. carbohydrates
   D. glycogen
   E. all of above

3. The biliary tract consists of
   1. gall bladder
   2. cystic duct
   3. hepatic duct
   4. portal vein
   5. common bile duct

   A. all but 1
   B. all but 3
   C. all but 4
   D. all of above

4. Kupffer cells of the liver are specific for
   A. hemoglobin
   B. bilirubin
   C. bacteria
   D. antibodies

5. One of the liver functions is to detoxify
   1. poisons
   2. drugs
   3. bacteria
   4. dyes
   5. alcohol
   6. ammonia

   A. 1,5,6
   B. all but 3,4
   C. all but 6
   D. all of above

6. The presense of bilirubin in the urine indicates
A. normal functioning
B. malabsorption in the intestines
C. an increase in vascular bilirubin
D. need of dietary restriction

7. Bilirubin is a pigment found in red blood cells. The liver processes this substance to be used as
A. prothrombin - for clot formation
B. urea - for detoxification of protein
C. bile - for digestion of fats
D. albumin - for tissue nourishment

8. Which substance in the blood stream is responsible for the maintenance of osmotic pressure?
A. albumin
B. globulin
C. hemoglobin
D. fibrinogen

9. The heaptic vein empties into the
A. hepatic artery
B. inferior vena cava
C. right atrium
D. hepatic duct

10. The venous blood flow to the liver can use a collateral circulation through the
A. inferior vena cava
B. biliary tract
C. esophageal veins
D. liver capillaries

11. One complication of liver disease is hemorrhagic tendencies. One causal factor is the inability of the liver to
A. maintain blood albumin levels
B. store and utilize vitamin K
C. utilize the glycogen in storage
D. function effectively due to congestion of blood

12. Juandice is caused by the increased blood level of
A. albumin
B. urobilinogen
C. lipids
D. bilirubin

13. Liver disease, such as cirrhosis, would impair which of the following processes?
1. blood filtration
2. detoxification of poisons
3. blood clotting
4. storage of vitamins

A. 1,4
B. 2,3,4
C. 1,2,3
D. 1,2,3,4

14. Gastric hemorrhage in cirrhosis is due to the rupture of
    A. esophageal varices
    B. hepatic veins
    C. liver cells
    D. duodenal veins

15. Ascites, or edema, associated with cirrhosis, can be related to a decrease in
    A. formation of bilirubin
    B. vascular albumin
    C. glucose levels
    D. sodium intake

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Student Competency Sheet

Unit IV: Endocrine Dysfunction
Module D: Caring For The Patient With Problems of the Biliary System

Competency: Relate nursing interventions common to the care of a patient having a cholecystecomy.

Performance Objectives: Upon completing the case study questions, the student will:

1. Determine an effective approach to the promotion of respiratory gas exchange in postoperative clients.
2. Identify assessments of a client with obstruction in the biliary tract.
3. Develop interventions for a client experiencing post-op complications of nausea, vomiting, fever, and infection.
4. Evaluate effectiveness of nursing interventions from client responses of wellness.

Learning Activities:

_______ 1. Complete case study questions using lab text and nursing text on cholecystectomy.

_______ 2. Define: cholangiogram
cholecystectomy
cholecystitis
cholelithiasis

_______ 3. Discuss in class the difficulties that may be encountered in accomplishing nursing goals with a cholescystectomy patient.

Evaluation: Completion of case study with 75% accuracy.

Extended Learning Activities: Develop a care plan for a cholecystectomy patient in the clinical area.

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PATIENT CASE STUDY

Joyce Gill is a 37 year old mother of 3 children who is admitted with increasingly painful episodes of gastric discomfort.

Asssessments: She states she has intolerance to fatty foods over the last 6 months.

Pain: Also has considerable RUO abdominal pain radiating to the mid-epigastric area. The pain has increased in severity the past week with pain radiating to the right scapula and right chest wall.

Skin: Warm, moist, good turgor; mild cutaneous icterus but denies pruritis.

Extremities: Peripheral pulses equal but difficult to locate in legs; varicosities in both legs; Edema 1+.

GU: Concentrated dark amber urine.

GI: Stools light brown; active bowel sounds; rebound tenderness right abdomen and epigastric area, nausea, occasional vomiting.

Physicians Orders:

NPO for cholecystogram
Demerol 50mg.
Vistaril 50mg. IM q3h for pain

Aqua Mephyton 10mg. IM now
Lo Fat Diet
I.V. 5%D in 1/2 NS 100cc/hr.

Bloodwork showed following results:

Tests:	Joyce's Value	Normal	Cause for abnormality
Hgh	[illegible].5gr		
Hct	[illegible]		
RBC	4.0		
WBC	13,000		
Platelets	219,000		
Prothrombin	34 sec		
Sodium	130		
Potassium	4.2		
Chloride	97		
CO_2	28		
D. Bilirubin	0.5mg		
Icterus Index	15U.		
Alk. Phos.	6U/ml		
SGOT	225U		
SGPT	275U		
Serum Amylase	11U.		

Study Questions: What is a common cause of cholelithiasis and cholecystitis?
Fill in normal values and cause for abnormality.
What causes the changes in the characteristics of Joyce's urine and fecal matter? Explain.
Why is Demerol the analgesic of choice versus morphine?
Why is Aquamephyton ordered?

Following surgery for a cholecystectomy multiple calcified stones were found blocking the biliary tract. A T tube drain is inserted in the subhepatic area and connected to a gravity drainage bag; an NG tube is on low suction. Orders call for:

Blow bottles, cough, deep breathe q2h
IPPB therapy qid
Antiembolus base
5% D in - 45 N.S. with KCl 20mEq for 24 hours
Change dressing PRN

On the 2nd postoperative day, Joyce ambulated to the bathroom with NG tube clamped. She voided 300cc of dark amber urine. Upon returning to bed she vomited 100cc of dark bile colored fluid. Joyce was dizzy, diaphoretic and flushed. The nurse irrigated and reconnected the NG tube and checked vital signs noting a fever 39°C. The wound area was examined and found to be red, tender and draining purulent material.

Questions: Why are antiemobolus hose therapeutic for Joyce? Why is IPPB an important adjunct to coughing and deep breathing? List the reasons for changing the surgical dressing. What postoperative complications might be responsible for Joyce's fever? How do body fluid requirements change? Can you explain why Joyce vomited 100cc of bile colored fluid? What happens if the drainage tubing connected to the T tube becomes kinked? What electrolytes are being lost through the NG tube? From the incisional drainage? How might these losses affect wound healing? Because Joyce is overweight, what effect might obesity have on her postoperative care? What does Joyce's concentrated urine indicate in terms of postoperative physiological response? Explain. What are the therapeutic effects of drains and what are their nursing implications.

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Teachers Guide

Unit IV: Endocrine Dysfunction
Module D: Caring For Patient With Problems of the Biliary System

Teachers Note:

Discuss in class the abnormal lab values and the pathophysiology; the placement of peurose drains or T tubes for bile drainage.

Review for students the locations of calculi in the biliary tract and which sites would cause jaundice.

Bibliography:

Bell, J. "Just Another Patient With Gallstones?", Nursing 79, p. 27.

Frolich: Pathophysiology, 1976.

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Unit IV Exam - Endocrine Dysfunction

Endocrine System

1. In caring for the client during first 24 hours after a total thyroidectomy you would incorporate all of the following in your care EXCEPT
   A. Immediately report signs of cyanosis and difficulty breathing.
   B. Check her dressing and the back of her neck for drainage.
   C. See that a tracheostomy set is beside her bed.
   D. Observe for muscle spasms and convulsions which are early signs of tetany.

2. Following a thyroidectomy, a patient should be placed in
   A. Dorsal recumbent position.
   B. Semi-Fowler's position.
   C. Sim's position.
   D. Trendelenberg position.

3. Nursing intervention for a patient with hyperthyroidism would include
   1. sufficient rest and quiet environment.
   2. frequent small meals with carbohydrates.
   3. administration of oxygen.
   4. encouraging family visitation.

   A. 1,2
   B. 2,3
   C. 1,4
   D. all of above

4. In patients with diabetes insipidus there is faulty function of the
   A. thyroid gland.
   B. adrenal gland.
   C. pituitary gland.
   D. pancreas.

5. The thyroid gland recieves its' stimulus from the master gland which is the
   A. pancreas.
   B. pituitary.
   C. adrenal.
   D. parathyroid.

6. In hypothyroidism, typical symptoms would be
   A. increased appetite and weight loss.
   B. joint paint and frequency of urination.
   C. muscle twitching and difficulty swallowing.
   D. consistent weight gain and increasing fatigue.

7. Which of the following structures secretes norepinephrine?
   A. Adrenal Cortex.
   B. Adrenal Medulla.
   C. Anterior lobe of pituitary.
   D. Posterior lobe of pituitary.

8. Addison's Disease is due to hypofunction of the adrenal glands. Clinical symptoms are due to
   A. Hyponatremia.
   B. Hyperkalemia.
   C. Hypovolemia.
   D. All of these.

9. Nursing care of patient's with Addison's Disease will include all except
   A. observation of emotional status.
   B. maintenance of fluid restrictions.
   C. administration of cortisone.
   D. accurate recording of output.

10. In hypoparathyroidism you would expect to see
    A. excessive secretion of calcium with possible formation of urinary calculi.
    B. muscle weakness and decreased reflexes.
    C. decreased serum calcium and increased serum phosphorus.
    D. increased coagulability.

11. P.B. is receiving high doses of steroids for a non-endocrine health disruption. Based upon his receiving the steroids, his care plan should include all EXCEPT
    A. Clinitest urine.
    B. Low potassium diet.
    C. Check weight.
    D. Hematest stool.

Diabetes Mellitus

12. Mrs. Casel, 67, with diabetes mellitus, needs teaching for her disease process. Which one of the following diseases does her diabetes predispose her to the most?
    A. Arthritis.
    B. Osteoporosis.
    C. Otitis Media.
    D. Atherosclerosis.

13. One of the functions of insulin is to
    A. decrease formation of glycogen.
    B. prevent excess fat storage in the liver.
    C. stimulate the kidneys to reabsorb glucose.
    D. stimulate the metabolism of carbohydrates.

14. Vascular changes that occur in the diabetic affect all organs of the body but have their most serious effects, in terms of danger to life, when they occur in the
    A. lungs.
    B. liver.
    C. kidneys.
    D. pancreas.

15. Which of the following blood gases would you expect to find in a patient with diabetic coma?

    A. pH 7.30 CO_2 25 HCO_3 20
    B. pH 7.6 CO_2 45 HCO_3 40
    C. pH 7.30 CO_2 78 HCO_3 26
    D. pH 7.6 CO_2 30 HCO_3 24

16. All of the following situations increase the body's requirements for insulin except
    A. A Thanksgiving dinner with all the trimmings.
    B. Laryngitis with fever and swollen lymph nodes.
    C. An argument with the next door neighbor.
    D. Scheduling racquet ball court time everday at 8 a.m.

17. In adult onset diabetes the use of hypoglycemic agents such as Diabinese lowers the level of blood glucose by
    A. chemically combining with glucose to render it inert.
    B. stimulating the pancreatic cells to release insulin.
    C. lowering the renal threshold of glucose.
    D. potentiating the action of insulin.

Liver Disease

18. Mr. Mallory is a 55 year old carpenter with chronic liver disease resulting from alcoholism. He has just experienced an acute intensification of his disease. All of the following nursing measures are specifically indicated in his care EXCEPT
    A. Diligent skin care.
    B. Stools heme tested.
    C. Observation of mental status.
    D. Vital signs.
    E. Physical independence.

19. Mr. Mallory is bleeding into his gastro-intestinal tract and has become very confused and uncooperative since yesterday. This most alarms you because
    A. "digested" blood has a horrible odor.
    B. he will become anemic.
    C. you know his clotting mechanism is altered.
    D. you're afraid he'll be incontinent.
    C. intestinal bacteria will break down the blood liberating ammonia.

20. The development of collateral circulation due to portal hypertension is specifically found in all of the following except
    A. esophageal veins.
    B. hemorrhoidal veins.
    C. saphenous veins.
    D. umbilical veins.

21. The patient with liver impairment is prone to edema formation for all of the following reasons except
    A. increased ADH.
    B. increased plasma proteins.
    C. portal hypertension.
    D. increased aldosterone.

22. Esophageal varices may occur due to the presenceof portal hypertension and ascites may develop due to
    A. hypoalbuminemia.
    B. hypoaldosteronism.
    C. decreased ADH.
    D. hyponatremia.

23. Blood tests that could be diagnostic of liver disease would be
    1. glucose tolerance.
    2. prothrombin time.
    3. barium swallow.
    4. BSP dye injection.
    5. ammonia levels.

    A. 1 and 2
    B. 1,2,4,5
    C. 1,2,3,4
    D. 1,2,5

24. Which of the following would be the best assessment to determine the extent of liver dysfunction?
    A. Degree of jaundice.
    B. Extent of hypoventilation.
    C. Mental status.
    D. Presence of infection.

Gall Bladder Disease

25. Mrs. L. is admitted to the hospital with severe RUQ pain radiating to the right shoulder, jaundice, nausea and vomiting. Lab studies show an elevated conjugated Bilirubin and Prothrombin Time. Nursing responsibilities will probably include all the following EXCEPT
    [illegible]. check characteristics of stool, urine and emesis.
    B. observe for bleeding gums and provide extra pressure after administering injections.
    C. administer Morphine for relief of severe RUQ pain.
    D. wash client with tepid, cool water containing baking soda and try diversional therapy to relieve puritis.

26. Mrs. L., is scheduled for a cholecystectomy in A.M. Her complaints of RUQ pain after eating fatty foods may be due to
    A. inadequate bile production by the liver.
    B. inadequate bile production by the gallbladder.
    C. obstruction of the common bile duct by stones.
    D. obstruction of the hepatic duct leading to the common bile duct.

27. Post-operative coughing and deep breathing is especially important in Mrs. L's care because
    A. obesity tends to delay healing.
    B. cholecystectomy involves upper abdominal surgery.
    C. post-operative pain will interfere with breathing.
    D. drainage tubes will be in place for one week.

28. The purpose of inserting a T-tube into the common bile duct after cholecystectomy is to
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    B. collect bile to be given to the patient with meals for digestion of fats.
    C. assure the physician bile production has stopped.
    D. promote drainage of bile until normal flow is established.

29. If Mrs. B. becomes juandiced in her recovery period the nurse knows that she could have

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B. bile flow obstruction.
C. hepatic injury from surgery.
C. pancreatitis.

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Unit IV Exam - Endocrine Dysfunction

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B. collect bile to be given to the patient with meals for digestion of fats.
C. assure the physician bile production has stopped.
[✓ D.] promote drainage of bile until normal flow is established.

29. If Mrs. B. becomes juandiced in her recovery period the nurse knows that she could have
A. viral hepatitis.
[✓ B.] bile flow obstruction.
C. hepatic injury from surgery.
C. pancreatitis.

Competencies

Unit V: Problems of Nutrition

I. Upper GI Obstructions
   A. Describe nursing interventions for clients' having radical neck dissection for cancer of the larynx

   B. Relate common symptoms and treatment for clients' with esophageal:
      1. diverticulum
      2. chalasia
      3. hernia (Hiatal)
      4. cancer

   C. Compare and contrast symptoms and treatments for:
      1. gastritis - acute and chronic
      2. peptic/duodenal ulcer
      3. gastric cancer

   D. Identify side effects from the following gastric surgical procedures:
      1. Vagotomy and Pyloroplasty
      2. Andrectomy
      3. Billroth I
      4. Billroth II

   E. Identify nursing responsibilities related to gastric post-op care

II. Lower GI Obstructions
   A. Differentiate the characteristic signs of small versus large intestinal obstruction

   B. State at least 3 types of mechanical and functional obstruction of the small and large intestines. Identify:
      1. complications
      2. nursing interventions

   C. Identify major characteristics in the diagnosis of Regional Enteritis and Ulcerative Colitis. State the following in relation to each disease process:
      1. medications
      2. nutrition
      3. cultural diversity patterns
      4. complications

   D. Identify the following in relation to diverticulitis and cancer of the large intestine:
      1. signs and symptoms
      2. diagnosis
      3. treatment
      4. potential complications of surgery

E. Relate the types of ostomy procedures to their location and type of discharge
   1. Identify specific teaching needs of patients with permanent ostomies

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Student Competency Sheet

Unit V: Problems of Nutrition
Module A: Caring for the Patient With Laryngectomy

Competency: To identify specific nursing interventions for laryngectomy patients.

Performance Objectives: Given a postop assessment sheet, the student will fill in the information critical to the care of a laryngectomy patient.

Learning Activities:

_______ 1. Read: Shafer's pp. 336-40, 592-3, 359-63.

_______ 2. Fill in post-op assessment sheet for laryngectomy surgery.

_______ 3. List in your own words the step by step procedure in cleaning a tracheostomy tube.

Evaluation:

1. Post-op assessment sheet includes rationale and/or complication for each nursing intervention.
2. Tracheostomy care procedure is accurate.

Extended Learning Activities:

Read: Nursing Skillbook: "Helping Cancer Patient's Effectively: Head & Neck" 1978, pp. 150-56.

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Immediate Post Op Assessment: Laryngectomy

Unit V: Problems of Nutrition
Module A: Caring for the Laryngectomy Patient

Directions: Fill in data for each nursing intervention. Provide the rationale (importance) and any complication that needs to be assessed.

Long Range Goal - Help patient and family deal with after effects of laryngectomy surgery.

Short Term Goal - Immediate - Prevent or treat surgical complications. Provide comfort and relieve anxiety.

Priorities: check airway, elevate HOB, check vital signs, I&O, trach & stoma care, maintain wound suction, give analgesics as ordered, N/G care, wound care and hemovac site care.

1. Airway -

2. ↑HOB -

3. V.S. -

4. I&O -

5. Hemovac -

6. Wound Care -

7. Pain -

8. Psychological Support -

9. N/G Tube -

10. Mouth Care -

Teachers Guide

Unit V: Problems of Nutrition
Module A: Caring For the Patient With Laryngectomy

Bibliography:

Nursing Skillbook: "Helping Cancer Patients' Effectively" 1978, pp. 150-156. (Head & Neck)

Teachers Note:

Invite a patient from Lost Cord Club to "speak" to class.

Pictures of patients' with radical neck surgery help students visualize body image changes.

A diagram of the neck showing a tracheostomy and the change in air flow helps students visualize the anatomy of the tracheo-esophogeal area.

Key to Post-op Assessment Sheet:

Long Range Goal - Help paient and family deal with after affects of laryngectomy surgery.

Short Term Goal - Immediate - Prevent or treat surgical complications; Provide comfort and relieve anxiety.

Priorities: check airway, elevate HOB, check vital signs, I&O, trach & stoma care, maintain wound suction, give analgesics as ordered, N/G care, wound care and hemovac site care.

1. Airway - prevent any respiratory emergency - keep tube patent-proper suctioning (gentle suctioning - do not attempt to deep suction through mouth or nose-could accidentally penetrate suture line), heated humidification, Trach care 1x/shift, C/DB and turning.

2. ↑ HOB - promotes lymphatic drainage and decreased pressure on neck flaps to take tension off sutures so swallowing is easier for patient. Tonsil tips for suctioning in oral area due to edema in area. When moving patient support back of neck with both hands to prevent painful tension on sutures and bleeding.

3. ✓ V.S. - if changed could signify respiratory distress, edema, throat irritation, pneumonia, hemorrhage or inadequate wound drainage.

4. I&O - IV's and antibiotic infusion, urinary output normal, need to replace lost fluids, maintain renal flow.

5. Hemovac - Drainage catheters remove fluid from potential dead space left after removal of larynx and related structures. Usually kept on constant unless otherwise ordered. DO NOT DISCONNECT TO MEASURE UNLESS ORDERED. Hooked up to wall suction, need to check often for patency, use strict sterile technique, PHYSICIAN WILL IRRIGATE IF NECESSARY, hemovac site care qd, usually removed 3-4 days post op and pressure dressing applied over site to prevent fluid accumulation.

6. Wound Care - Observe suture line color, check for any possible necrosis or air or fluid accumulation, provide sterile wound care.

7. Pain - Minimal post op pain since sensory nerves cut for skin flaps. Mild analgesics as ordered, not narcotics (depresses respiration and cough reflex).

8. Psychological Support - Communication - listen to patient fears and frustrations due to inability to communicate and altered body image. Imperative - pad and pencil, call light; work out communication system prior to surgery (PLACE NOTE ON CONTROL BOARD OF INTERCOM TO INFORM ALL STAFF MEMBERS THAT PATIENT CAN'T SPEAK).

9. N/G Tube - good nutritional intake vital to tissue healing - 10-14 days for N/G tube; 24-48 hours post op tube feedings - begin progress to H_2O - blenderized diet - when intake sufficient IV d'cd and antibiotics given by heparin lock; qd weights to check calorie status.

10. Mouth care - frequent and meticulous to decrease chance of infection - patient taught to do own mouth care; cepacol.

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Student Competency Sheet

Unit V: Problems of Nutrition
Module B: Nursing Care of the Patient With Gastric Surgery

Competency: Identify the special nursing considerations for a patient with interruptions to nutrition from gastric problems.

Performance Objectives: The student will identify the teaching needs and nursing responsibilities for the post-op care of a patient having a subtotal gastrectomy.

Learning Activities:

_______ 1. Read Shafer's, Medical Surgical Nursing, pp. 578-9; pp. 594-601.

_______ 2. Submit diagrams of the 4 types of gastric surgery labeling each type and explaining what is removed.

_______ 3. Develop a nursing care plan for a patient having a sub-total gastrectomy (5 days post-op).

Evaluation: Satisfactory development of a nursing care plan for a gastrectomy patient. (Includes teaching needs and dietary concerns).

Enrichment Activities:

_______ 1. Read: Simmons, S. "Care of The Patient With a Gastric Ulcer", AJN, July, 1970, pp. 1472-1475.

_______ 2. Read: Given, B. Gastroenterology in Clinical Nursing, 1979, pp. 147-179.

_______ 3. Brunner, L., "What To Do (And What To Teach Your Patient) About Peptic Ulcer". NSG 76, Nov. p. 27-34.

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Teachers Guide

Unit V: Problems of Nutrition
Module B: Care of The Patient with Gastric Surgery

Teachers Note:

1. Give Prestest for review of physiology. Go over in class.
2. Review for students the chemical stimulus for digestion in the stomach. (Crouch and McClintic; p. 613-14).
3. Compare and contrast characteristics of peptic and duodenal ulcers.
4. Prepare pictures of various types of gastric surgery for students to visualize operative procedures.
5. Emphasize discharge teaching needs for dietary considerations in patients with gastric surgery.

Bibliography:

1. Nordmark: Scientific Foundations of Nursing, 1975, Lippincott.
2. Tucker, et. al., Patient Care Standards, 1980, Mosby.
3. J. McClintic, Physiology of the Human Body, Wiley, 1978.
4. Nursing Skillbook: "Helping Cancer Patient's Effectively", 1978 pp. 107-116, (good diagrams).

Key to Pretest Review:

1. H
2. L
3. N
4. D
5. K
6. F
7. I
8. C
9. M
10. L
11. O
12. B
13. E
14. J
15. E

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Nur. V Pretest for Review

Match Column A with correct answer in Column B.

_______ 1. Hcl
_______ 2. Liver
_______ 3. Pancreas
_______ 4. Pepsin
_______ 5. Stimulation of vagus nerve
_______ 6. Bile
_______ 7. Bile pigments
_______ 8. Amylase
_______ 9. Gastrin
_______10. Secretin
_______11. Gallstones
_______12. Parietal cells
_______13. Intrinsic factor
_______14. Antrum
_______15. Vitamin B_{12}

A. Anticholingeric
B. Secretes Hcl
C. Pancreatic enzyme that converts starch and glycogen to maltose
D. Gastric enzymes that act on protein
E. For formation of RBC
F. Emulsifies fats
G. Stores bile
H. Neutralized by pancreatic juices in duodenum
I. Gives color to feces
J. Secretes gastrin
K. Increases gastric peristalsis
L. For secretion of bile
M. Hormone in stomach that stimulates flow of gastric juices
N. Secretes insulin
O. Blocks flow of bile
P. Stimulates cholecystokinin

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Student Competency Sheet

Unit V: Problems of Nutrition
Module C: Caring for the Patient With Ulcerative Colitis and Chrohn's Disease

Competency: Assesses characteristics of Colitis and Chrohn's disease.

Performance Objective: Given the characteristic of colitis and Chrohn's disease the student will provide significant data that will compare and contrast the 2 diseases.

Suggested Learning Activities:

______ 1. Shafer's; p. 603-605.

______ 2. Kroner, "Are You Prepared For Your Ulcerative Colitis Patient?" NSG 80, April, p. 43-49.

______ 3. Compare Chrohn's Disease With Colitis by filling out the form on disease charactistics.

Evaluation: Handout on disease characteristics is completed with sufficient data in each column.

Extended Learning Activities: Develop a care plan for a patient in the clinical area that requires teaching of either disease including psychosocial needs, diet, medication, and discharge planning.

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Unit V: Problems of Nutrition
Module C: Chrohn's Disease & Ulcerative Colitis

Directions: Fill in the information on each disease according to the common areas involved. Include any significant data that differentiates the two diseases.

Characteristics	Chrohn's Disease	Ulcerative Colitis
Ages		
Depth of injury		
Rectal area (%)		
Ⓡ colon		
Small bowel		
Effect on Ileum		
Inflammatory masses		
Rectal bleeding		
Anal abscess (%)		
Fistula		
Steatorrhea		
Nutritional deficit		
Fibrious stricture		
Course of disease		
Abdominal pain (type)		
Diarrhea		

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Teachers Guide

Unit V: Problems of Nutrition
Module C: Caring for the Patient With Chrohn's Disease & Ulcerative Colitis

Bibliography:

1. Given, B. Gastroenterology in Clinical Nursing, Mosby, 1979.
2. Frolick, E., Pathophysiology, Lippincott, 1976.

Note: Discuss psycho-social and developmental needs of young adult patients including cultural diversity of race and diet significance.

Key to disease characteristics:

Characteristics	Chrohn's Disease	Ulcerative Colitis
Ages	20-30-40-50	15-49
Depth of injury	all layers submucosa, muscle	mucosa and submucosa
Rectal area (%)	50%	95%
Ⓡ colon	frequent	Ⓡ occasional; Ⓛ colon
Small bowel	involved - Terminal Ileum	N
Effect on Ileum	narrowed	widened
Inflammatory masses	common - segmental areas	rare
Rectal bleeding	infrequent	common
Anal abscess (%)	75%	10%
Fistula	common	rare
Steatorrhea	frequent	rare
Nutritional deficit	common	frequent
Fibrious stricture	common	absent
Course of disease	slo-progressive	Remissions, relapses, cancer risk
Abdominal pain (type)	colicky	predefecation
Diarrhea	present, less	early and frequent more severe, bloody

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Student Competency Sheet

Unit V: Problems of Nutrition
Module D: Lower GI Obstruction: Large Intestines.

Competency: Identify nursing interventions for a patient with a transverse colostomy.

Performance Objective: Given a client needing colostomy care the student will identify problems, appropriate goals, and nursing interventions.

Learning Activities:

_______ 1. Read: Shafer's pp. 579-585.

_______ 2. Develop a care plan for a patient with transverse colostomy 6 days postop; or teach a patient in the clinical area about caring for a colostomy; develop a care plan for this patient.

Evaluation: States at least 4 appropriate problems common to colostomy patients, relevant short term/long term goals, and nursing interventions.

Enrichment Activities:

_______ 1. Accompany an ENT on hospital rounds.

_______ 2. Consult a ENT (Enterostomal Therapist) as a referral person for patient teaching. Describe her role.

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Teachers Guide

Unit V: Problems of Nutrition
Module D: Lower GI Obstruction: Large Intestines.

Teachers Note: Invite a ENT to class to display new appliances and discuss patients problems that she commonly sees.

Bibliography:

1. Nursing Skillbook: "Helping Cancer Patient's Effectively", 1978, pp. 95-106.
2. Phipps, Patient Care Studies in Medical-Surgical Nursing, "Postop Care of a Woman With a Colostomy", 1972, p. 106.
3. McConnell, E., "All About Gastrointestinal Intubation", NSG 75 Sept. p. 29.

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Unit V: Problems of Nutrition:
GI Obstructions

Competency Exam

Directions: Circle the best answer.

1. Mr. L. is admitted to the hospital with progressive dsyphagia, cough painful swallowing over the past 2 - 3 weeks. You would suspect a diagnosis of:
   A. Epiglottitis
   B. Extrinsic cancer of larynx
   C. Intrinsic cancer of larynx
   D. Laryngotracheobronchitis

2. Mr. C. has had a total laryngectomy. He returns to his unit in a stable, but restless state. The priority for intervention immediately postoperatively would be:
   A. assess client for hemorrhage from the wound area.
   B. maintain a patent airway by suctioning prn.
   C. plan appropriate method(s) of communication to allay anxiety.
   D. provide for drainage of copious oral secretions.

3. During the first postoperative day, Mr. C's nurse accidently removed the nasogastric tube as she prepared to administer a feeding. Why should she not reinsert the tube?
   A. Accidental insertion into airway could occur due to edema.
   B. Difficult insertion likely due to difficulty swallowing.
   C. Disruption of internal suture line could occur.
   D. Trauma to esophageal tissues could occur.

4. On the eleventh postoperative day, Mr. C. began drinking a full liquid diet. During tracheal suctioning, he calls the nurse to report pinkish secretions. Which one of the following interventions would be least appropriate?
   A. Instruct him to call her next time he drinks to observe his ability to swallow.
   B. Instruct him to call her next time he requires suctioning.
   C. Instruct him to take nothing by mouth until your check with the physician.
   D. Reassure him that often too vigorous suctioning can cause tissue trauma and bleeding.

5. The client being discharged following a total larynectomy with radical neck surgery for lymph node involvement should be instructed to assess for which of the following?
   1. Bowel dysfunction.
   2. Respiratory distress.
   3. Rhinorrhea.
   4. Sensory loss over face, shoulder
   5. Tracheoesophageal fistula

   A. 1,2,4,5
   B. 1,2,3,5
   C. 2,3,4,5
   D. 1,3,4,5
   E. 1,2,3,4,5

6. Maintenance of an effective wound drainage septem is of utmost importance in clients with radical neck surgery for all of the following reasons EXCEPT:
   A. Minimizes head and neck edema
   B. Prevents fistula formation
   C. Prevents pressure on phrenic nerve
   D. Prevents respiratory distress
   E. Prevents wound dehiscence

7. In assessing for respiratory difficulty in the client with radical neck surgery with a tracheostomy, the method which would be least appropriate for accurate findings would be:
   A. listening for air exchange from tracheostomy.
   B. measurement of vital signs.
   C. observation of chest exclusion.
   D. observation of client's behavior.
   E. observation of client's color.

Gastric Surgery

Mr. Lewis is a 51 year old man admitted with recurrent hemorrhage from a gastric ulcer. He is scheduled for a gastrectomy.

8. When a partial gastrectomy is performed, the antrum is usually removed because it:
   A. secretes HCl.
   B. regulates production of HCl.
   C. is the easiest portion of the stomach to remove.
   D. is the upper portion of the stomach.

9. The mixture of digestive enzymes and food in the stomach is called:
   A. chyme.
   B. pepsin.
   C. trypsin.
   D. chorion.

10. Pernicious anemia may be a problem after gastrectomy because:
    A. the extrinsic factor is produced in the stomach.
    B. the extrinsic factor is absorbed in the stomach.
    C. the intrinsic factor is produced in the stomach.
    D. there is a high incidence of hemorrhage.

11. Pernicious anemia can be prevented by administering:
    A. Vitamin B_6
    B. Vitamin B_{12}
    C. ferrous sulfate
    D. iron dextran

12. All of the following express current feelings on the Bland diet used in peptic ulcer disease, except:
    A. Since small meals result in less acidity than large meals, small meals are wise practice.
    B. Milk provides some buffering action and should be taken in between meals.
    C. Diet as a continued therapy for ulcer disease is not a primary concern.
    D. A Bland diet restriction is necessary for only 8 weeks.

13. The symptoms of duodenal ulcer (in comparison to gastric) are significant when:
    A. pain occurs 1 hour p.c. and is relieved by eating.
    B. hematemsis occurs suddenly.
    C. the patient has severe pain during the night.
    D. there is a greater quantity of gastric acid that causes left upper quadrant pain.

14. Mr. Jones is your neighbor and tells you he thinks he has a peptic ulcer. You discuss each of the following with him. The answers to which question will most influence you in determining the urgency with which you direct him to medical care?
    A. the description of his pain in relation to eating.
    B. the things he has found that relieve his pain.
    C. the color and consistancy of his stools.
    D. the amount of alcohol and cigarettes he uses.

15. Harry Wilson (44) has had gastric ulcers for several years with 2 major episodes of bleeding. He is presently admitted for surgery. Which of his problems could have contributed most significantly to his ulcer formation?
    A. obesity
    B. adrenal insufficiency
    C. diabetes mellitus
    D. hypertension
    E. none of the above are significant

16. Which of Harry Wilson's behavior would be most consistant with his gastric ulcer disruption?
    A. Wakes up at night with epigastric pain.
    B. Has severe cramping after eating fried foods.
    C. Abdominal pain is relieved by eating.
    D. Eating meals increases his discomfort.

17. Mr. Hopkins, 46 years old, was admitted to the hospital with a diagnosis of bleeding gastric ulcers. He is scheduled for a subtotal gastrectomy (Bill Roth II). This procedure will allow stomach contents to bypass the:
    A. cardiac sphincter.
    B. jejunum.
    C. duodenum.
    D. fundus.

18. Do to this type of surgery (Bill Roth II) he may develop which of the following?
    A. achlorohydria.
    B. pernicious anemia.
    C. pyloric stenosis.
    D. none of the above.

19. Mr. Hopkins has an N/G tube to suction post-op that must be checked frequently for patency and contents of aspiration. The nurse notices that there has been no fluid return in the tube for 45 minutes. Her best action would be to:
    A. call the doctor stat to check for obstruction of tube.
    B. instill 30 cc of normal saline under gentle pressure to check patency.
    C. progress the tube further down approximately 1/2 inch and then check for patency.
    D. have the patient turn to their right side and cough.

20. Which of the following is NOT a symptom dumping syndrome?
    A. hypoglycemia.
    B. diaphoresis.
    C. epigastric fullness.
    D. diarrhea.
    E. glycosuria.

21. Patients should be told that the symptoms of dumping syndrome:
    A. are something they must expect after meals.
    B. will eventually subside.
    C. will require permanent diet restrictions.
    D. will only occur up to the first hour after eating.

22. The symptoms of dumping syndrome following gastrectomy surgery may be eliminated by:
    1. Eliminating sugars, jellies, cakes, and cookies.
    2. Eating only 3 large meals.
    3. Eating small portions at one time but frequently throughout the day.
    4. Eliminating liquids with meals, but taking them 30-40 minutes later.
    5. Reducing roughage to help slow down peristalsis.
    6. Avoiding large portions of meats and fried foods.

    A. 1,2,4,6
    B. 1,3,4,5
    C. 1,3,4,6
    D. 1,3,4

Intestinal Obstructions

23. Regional enteritis (Crohn's disease):
    A. is an inflammatory disease of the small intestine.
    B. usually affects the terminal ileum.
    C. frequently recurs even with surgery.
    D. all of the above.
    E. A and B only.

24. A patient who has a total colectomy and ileostomy for ulcerative colitis looses significant amounts of:
    A. platelets and WBC's.
    B. bilirubin and urea.
    C. nutrients.
    D. water and sodium.

25. Anemia is a common sign found in inflammatory diseases of the bowel. Primarily, this occurs due to:
    A. a decrease of absorption surface of the bowel.
    B. the side effect of anticholinergic therapy.
    C. the dietary restriction of low residue.
    D. recurrent episodes of diarrhea and dehydration.

26. Which of the following best indicates that a patient who's experienced paralytic ileus is recovering?
    A. The patient passes flatus.
    B. The patient complains of thirst.
    C. Bowel sounds are absent on auscultation.
    D. Peristalsis can be felt when abdomen is palpated.

27. Which of the following measures should be carried out initially for a client who has an intestinal tube (Cantor or Miller-Abbott tube) inserted?
    A. Avoid changing position of the tube.
    B. Change client's position at appropriate intervals.
    C. Maintain bedrest to insure proper placement of tube.
    D. Tape tube to upper lip and cheek rather than forehead.

28. J.B., 76 years old, is 6 days post-operative from surgery for a small bowel obstruction. He is asymptomatic other than having no return of bowel sounds. What is the most likely reason?
    A. Normal progress after major abdominal surgery.
    B. Recurrent obstruction due to adhesions.
    C. Recurrent obstruction due to paralytic ileus.
    D. Slow return of bowel function due to age.

29. Which statements are correct when teaching a patient colostomy irrigation at home in the bathroom?
    1. Insert the catheter 8-10 inches into the stoma.
    2. Lubricate the catheter with a water soluble jel.
    3. Have the bottom of the irrigating bag at shoulder level with the water level in clear view.
    4. Allow 30-45 minutes for the colon to drain.
    5. When the patient experiences discomfort, regardless of the amount of solution used, discontinue irrigation and resume it in 24 hours.

    A. 1,2,3
    B. 1,4,5
    C. 2,3,4
    D. 3,4,5

30. Which activity is most important when teaching a client with a left sided colostomy self-care activities?
    A. Adhering to a strict diet.
    B. Limiting physical activity.
    C. Irrigating colostomy daily.
    D. Establishing a regular bowel routine.

31. Mrs. M. is 5 days postoperative from an ileostomy for ulcerative colitis. She is stable and has no other medical or surgical problems. All of the following are important nursing interventions except:
    - A. assess for vitamin deficiencies.
    - B. encourage fluids.
    - C. assess for potassium and/or sodium deficits
    - D. provide high roughage diet.
    - E. teach avoidance of gas forming foods.

32. The nurse is preparing to change a colostomy bag. Which of the following would be least likely to convey her acceptance of his altered body image?
    - A. Discussing subjects of interest with the patient.
    - B. Putting on gloves before starting procedure.
    - C. Encouraging the patient to assist where he desires.
    - D. Explaining to the patient that he will be taught the procedure when ready.

33. When planning dietary instructions for a colostomy patient the nurse should develop her plan based on the fact that:
    - A. foods containing roughage should be eliminated.
    - B. each person must experiment what foods are best.
    - C. gas forming foods in moderate amounts are well tolerated.
    - D. a constipating diet will produce a formed stool with more regularity.

34. Which of the following long-term objectives would be unrealistic for an ileostomy patient?
    - A. Managing his own care.
    - B. Returning to normal nutritional state.
    - C. Resuming normal sexual activity.
    - D. Controlling evacuation of the bowel.

35. Mr. M. is admitted with a cancerous tumor of the rectum. Behaviors you might see are:
    1. frank bleeding with stools.
    2. constipation or diarrhea.
    3. tarry colored stools.
    4. Hgb. 9.6 Gm.
    5. 15 lb. weight loss.

    - A. 2,3,5
    - B. 1,3,4
    - C. 1,2,4,5
    - D. all of the above

36. Malignant tumors of the colon are:
    1. predominately found in the rectum.
    2. more frequent in males 50-70 years old.
    3. detected early by tarry stools.
    4. identified positively through Barium x-rays.
    5. usually vague symptoms of anorexia, dyspepsia.

    - A. 1,5
    - B. 2,3,4
    - C. 1,2,5
    - D. all of the above

37. Which of the following best describes small bowel obstruction?
    A. Delayed abdominal distention, sharp pains, vomiting.
    B. Severe abdominal distention, obstipation, dehydration.
    C. Dull, steady pain, pencil-like stool, absence of vomiting.

38. Decompression therapy is vital in intestinal obstruction because increased pressure and distention can cause all except:
    A. hypovolemic shock.
    B. peritonitis.
    C. renal failure.
    D. paralytic ileus.

39. A low residue diet tends to delay bowel activity and is indicated for patients with ileitis, and colitis. Which of the following dinners would be most appropriate as low residue?
    A. Fried chicken, potatoes augratin, lettuce and tomato salad with oil vinegar dressing, jello.
    B. Baked fish, buttered rice, beef bouillon, pound cake alamode.
    C. Baked pork chop, baked potato, green beens almondine, apple pie.

40. Mr. M. had a right sided transverse signle barrell colostomy performed 8 days ago. He asked the nurse if he will need to wear an appliance at all times after he goes home? The proper response of the nurse would be:
    A. once he has regulated his bowel movement to a certain time each day a colostomy bag will not be necessary.
    B. an appliance will be necessary during the day and can be removed at night.
    C. an early morning irrigation allowing 30 minutes for adequate return should eliminate the need for a constant appliance.
    D. a bag must be worn at all times due to the unpredictable semi-liquid stool.

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Unit V: Problems of Nutrition:
GI Obstructions

Competency Exam

Directions: Circle the best answer.

1. Mr. L. is admitted to the hospital with progressive dsyphagia, cough painful swallowing over the past 2 - 3 weeks. You would suspect a diagnosis of:
    - A. Epiglottitis
    - B. Extrinsic cancer of larynx
    - [✓ C.] Intrinsic cancer of larynx
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    5. Tracheoesophageal fistula

    - [✓ A] 1,2,4,5
    - B. 1,2,3,5
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Gastric Surgery

Mr. Lewis is a 51 year old man admitted with recurrent hemorrhage from a gastric ulcer. He is scheduled for a gastrectomy.

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   A. secretes HCl.
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9. The mixture of digestive enzymes and food in the stomach is called:
   [✓ A.] chyme.
   B. pepsin.
   C. trypsin.
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10. Pernicious anemia may be a problem after gastrectomy because:
    A. the extrinsic factor is produced in the stomach.
    B. the extrinsic factor is absorbed in the stomach.
    [✓ C.] the intrinsic factor is produced in the stomach.
    D. there is a high incidence of hemorrhage.

11. Pernicious anemia can be prevented by administering:
    A. Vitamin B_6
    [✓ B.] Vitamin B_{12}
    C. ferrous sulfate
    D. iron dextran

12. All of the following express current feelings on the Bland diet used in peptic ulcer disease, except:
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C. diabetes mellitus
D. hypertension
E. none of the above are significant

16. Which of Harry Wilson's behavior would be most consistant with his gastric ulcer disruption?
A. Wakes up at night with epigastric pain.
B. Has severe cramping after eating fried foods.
C. Abdominal pain is relieved by eating.
[✓ D.] Eating meals increases his discomfort.

17. Mr. Hopkins, 46 years old, was admitted to the hospital with a diagnosis of bleeding gastric ulcers. He is scheduled for a subtotal gastrectomy (Bill Roth II). This procedure will allow stomach contents to bypass the:
A. cardiac sphincter.
B. jejunum.
[✓ C.] duodenum.
D. fundus.

18. Do to this type of surgery (Bill Roth II) he may develop which of the following?
A. achlorohydria.
B. pernicious anemia.
C. pyloric stenosis.
[✓ D.] none of the above.

19. Mr. Hopkins has an N/G tube to suction post-op that must be checked frequently for patency and contents of aspiration. The nurse notices that there has been no fluid return in the tube for 45 minutes. Her best action would be to:
[✓ A.] call the doctor stat to check for obstruction of tube.
B. instill 30 cc of normal saline under gentle pressure to check patency.
C. progress the tube further down approximately 1/2 inch and then check for patency.
D. have the patient turn to their right side and cough.

20. Which of the following is NOT a symptom dumping syndrome?
A. hypoglycemia.
B. diaphoresis.
[✓ C.] epigastric fullness.
D. diarrhea.
E. glycosuria.

21. Patients should be told that the symptoms of dumping syndrome:
A. are something they must expect after meals.
[✓ B.] will eventually subside.
C. will require permanent diet restrictions.
D. will only occur up to the first hour after eating.

22. The symptoms of dumping syndrome following gastrectomy surgery may be eliminated by:
1. Eliminating sugars, jellies, cakes, and cookies.
2. Eating only 3 large meals.
3. Eating small portions at one time but frequently throughout the day.
4. Eliminating liquids with meals, but taking them 30-40 minutes later.
5. Reducing roughage to help slow down peristalsis.
6. Avoiding large portions of meats and fried foods.

A. 1,2,4,6
[✓ B.] 1,3,4,5
C. 1,3,4,6
D. 1,3,4

Intestinal Obstructions

23. Regional enteritis (Crohn's disease):
A. is an inflammatory disease of the small intestine.
B. usually affects the terminal ileum.
C. frequently recurs even with surgery.
[✓ D.] all of the above.
E. A and B only.

24. A patient who has a total colectomy and ileostomy for ulcerative colitis looses significant amounts of:
A. platelets and WBC's.
B. bilirubin and urea.
C. nutrients.
[✓ D.] water and sodium.

25. Anemia is a common sign found in inflammatory diseases of the bowel. Primarily, this occurs due to:
    [✓ A.] a decrease of absorption surface of the bowel.
    B. the side effect of anticholinergic therapy.
    C. the dietary restriction of low residue.
    D. recurrent episodes of diarrhea and dehydration.

26. Which of the following best indicates that a patient who's experienced paralytic ileus is recovering?
    [✓ A.] The patient passes flatus.
    B. The patient complains of thirst.
    C. Bowel sounds are absent on auscultation.
    D. Peristalsis can be felt when abdomen is palpated.

27. Which of the following measures should be carried out initially for a client who has an intestinal tube (Cantor or Miller-Abbott tube) inserted?
    A. Avoid changing position of the tube.
    [✓ B.] Change client's position at appropriate intervals.
    C. Maintain bedrest to insure proper placement of tube.
    D. Tape tube to upper lip and cheek rather than forehead.

28. J.B., 76 years old, is 6 days post-operative from surgery for a small bowel obstruction. He is asymptomatic other than having no return of bowel sounds. What is the most likely reason?
    A. Normal progress after major abdominal surgery.
    B. Recurrent obstruction due to adhesions.
    [✓ C.] Recurrent obstruction due to paralytic ileus.
    D. Slow return of bowel function due to age.

29. Which statements are correct when teaching a patient colostomy irrigation at home in the bathroom?
    1. Insert the catheter 8-10 inches into the stoma.
    2. Lubricate the catheter with a water soluble jel.
    3. Have the bottom of the irrigating bag at shoulder level with the water level in clear view.
    4. Allow 30-45 minutes for the colon to drain.
    5. When the patient experiences discomfort, regardless of the amount of solution used, discontinue irrigation and resume it in 24 hours.

    A. 1,2,3
    B. 1,4,5
    [✓ C.] 2,3,4
    D. 3,4,5

30. Which activity is most important when teaching a client with a left sided colostomy self-care activities?
    A. Adhering to a strict diet.
    B. Limiting physical activity.
    C. Irrigating colostomy daily.
    [✓ D.] Establishing a regular bowel routine.

31. Mrs. M. is 5 days postoperative from an ileostomy for ulcerative colitis. She is stable and has no other medical or surgical problems. All of the following are important nursing interventions except:
    A. assess for vitamin deficiencies.
    B. encourage fluids.
    C. assess for potassium and/or sodium deficits
    [✓ D.] provide high roughage diet.
    E. teach avoidance of gas forming foods.

32. The nurse is preparing to change a colostomy bag. Which of the following would be least likely to convey her acceptance of his altered body image?
    A. Discussing subjects of interest with the patient.
    [✓ B.] Putting on gloves before starting procedure.
    C. Encouraging the patient to assist where he desires.
    D. Explaining to the patient that he will be taught the procedure when ready.

33. When planning dietary instructions for a colostomy patient the nurse should develop her plan based on the fact that:
    A. foods containing roughage should be eliminated.
    [✓ B.] each person must experiment what foods are best.
    C. gas forming foods in moderate amounts are well tolerated.
    D. a constipating diet will produce a formed stool with more regularity.

34. Which of the following long-term objectives would be unrealistic for an ileostomy patient?
    A. Managing his own care.
    B. Returning to normal nutritional state.
    C. Resuming normal sexual activity.
    [✓ D.] Controlling evacuation of the bowel.

35. Mr. M. is admitted with a cancerous tumor of the rectum. Behaviors you might see are:
    1. frank bleeding with stools.
    2. constipation or diarrhea.
    3. tarry colored stools.
    4. Hgb. 9.6 Gm.
    5. 15 lb. weight loss.

    A. 2,3,5
    B. 1,3,4
    [✓ C.] 1,2,4,5
    D. all of the above

36. Malignant tumors of the colon are:
    1. predominately found in the rectum.
    2. more frequent in males 50-70 years old.
    3. detected early by tarry stools.
    4. identified positively through Barium x-rays.
    5. usually vague symptoms of anorexia, dyspepsia.

    [✓ A.] 1,5
    B. 2,3,4
    C. 1,2,5
    D. all of the above

37. Which of the following best describes small bowel obstruction?
    [✓ A.] Delayed abdominal distention, sharp pains, vomiting.
    B. Severe abdominal distention, obstipation, dehydration.
    C. Dull, steady pain, pencil-like stool, absence of vomiting.

38. Decompression therapy is vital in intestinal obstruction because increased pressure and distention can cause all except:
    A. hypovolemic shock.
    B. peritonitis.
    C. renal failure.
    [✓ D.] paralytic ileus.

39. A low residue diet tends to delay bowel activity and is indicated for patients with ileitis, and colitis. Which of the following dinners would be most appropriate as low residue?
    A. Fried chicken, potatoes augratin, lettuce and tomato salad with oil vinegar dressing, jello.
    [✓ B.] Baked fish, buttered rice, beef bouillon, pound cake alamode.
    C. Baked pork chop, baked potato, green beens almondine, apple pie.

40. Mr. M. had a right sided transverse signle barrell colostomy performed 8 days ago. He asked the nurse if he will need to wear an appliance at all times after he goes home? The proper response of the nurse would be:
    A. once he has regulated his bowel movement to a certain time each day a colostomy bag will not be necessary.
    B. an appliance will be necessary during the day and can be removed at night.
    C. an early morning irrigation allowing 30 minutes for adequate return should eliminate the need for a constant appliance.
    [✓ D.] a bag must be worn at all times due to the unpredictable semi-liquid stool.

Competencies

Unit VI: Urinary Obstruction

- A. Identify common signs and symptoms of urinary tract infection
  - 1. State medical treatments for acute-chronic pyelonephritis
  - 2. Describe nursing interventions to prevent and control infection

- B. Identify the following parameters for renal and ureteral calculi
  - 1. Causes of formation
  - 2. Signs and symptoms
  - 3. Diagnosis
  - 4. Nursing interventions
  - 5. Complications of surgery

- C. Describe underlying pathology of nephrosis versus hydronephrosis
  - 1. State nursing interventions in caring for a client with nephrosis

- D. Describe 3 types of urostomy surgery for cancer of the bladder
  - 1. Identify postoperative assessments
  - 2. State nursing interventions for urostomy care

- E. Relate the following for acute-chronic renal failure:
  - 1. Signs and symptoms
  - 2. Diagnosis
  - 3. Nursing interventions
  - 4. Peritoneal dialysis procedure:
    - a. aseptic technique
    - b. charting
    - c. client assessments
  - 5. Hemo dialysis treatments:
    - a. Fistula vs shunt
    - b. nursing interventions
  - 6. Identify problems in renal transplants

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Student Competency Sheet

Unit VI: Urinary Obstruction
Module A: Renal Calculi

Competency: Identify nursing care of a patient with renal/ureteral calculi.

Performance Objective: The student will define terms related to problems and treatments of renal calculi and identify the specific nursing interventions and teaching needs of a patient.

Suggested Learning Activities:

_______ 1. Read: Shafer's pp. 660-664, 658, 622-628.

_______ 2. Complete study guide on Renal Calculi.

Evaluation: Completes study guide on calculi with 75% accuracy.

Extended Learning Activities:

_______ 1. Gault, P. "How to Break The Kidney Stone Cycle", NSG 78, Dec. p. 24-31.

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Student Competency Study Guide

Unit VI: Urinary Obstructions
Module A: Renal-Ureteral Calculi

Directions: Consult Shafer's text, dictionary, and/or suggested article by Gault, NSG 78, to complete the following areas.

A. Define:

Pylenephritis

Hydronephrosis

Urolithiasis

Cystitis

Dysuria

Renal Colic

IVP

KUB

Cystoscopy

Retrograde Pyelogram

Nephrolithotomy

Litholapaxy

B. Symptoms of Renal-Ureteral Calculi:

1. Describe types of pain:

2. GI problems:

3. Symptoms of Urinary Tract Infection:

4. Signs of Urinary Calculi:

C. Patient teaching for discharge

1. Fluids:

2. Foods:

Type of stone	Diet	Medication
Phosphate, ammonium, calcium		
Cysteine, urate		

3. Specific teaching:

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Teachers Guide

Unit VI: Urinary Obstructions
Module A: Renal Calculi

Bibliography:

1. Frolick, Pathophysiology, Lippincott, 1976.
2. Stark, "BUN/Creatinine: Keys to Kidney Function", NSG 80, May p. 33.

Key to Study Guide:

- A. Definition of terms.
- B. Symptoms of Calculi:
  1. Flank pain, radiates to groin; abdominal pain.
  2. Nausea and vomiting, diarrhea.
  3. UTI = temp elevation, chills, dysuria, pyuria, frequency, urgency, burning, low back pain.
  4. Hematuria, oliguria, extreme pain, stones in urine.
- C. Patient teaching:
  1. 3000 ml q.d.
  2. Acid Ash foods: meat, cheese, eggs, cranberry; Hiprex, Vit. C
     Alkaline ash: milk, veg, fruit, sod. bicarb; allopurinal
  3. Strain urine qd, pH, avoid UTI, observe urine, avoid dehydration, medications

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Student Competency Sheet

Unit VI: Urinary Obstruction
Module B: Chronic Renal Failure

Competency: Identify the major concerns in caring for a patient in renal failure.

Performance Objective: The student will observe a patient in renal dialysis and identify abnormal blood values, nursing goals and responsibilities, and patient psychological needs.

Suggested Learning Activities:

_______ 1. Read: Shafer's, Chapter 27 pp. 621-9, 638-55.

_______ 2. Attend a field trip to a dialysis unit and complete the nursing care plan provided.

_______ 3. Define: A-V
Shunt
Fistula

_______ 4. List precautions concerning a patient with a shunt.

Evaluation: Completes the care plan for renal dialysis identifying appropriate goals and responsibilities for nursing care.

Identifies at least 4 precautions in shunt care.

Extended Learning Activities:

_______ 1. Read: Nursing Skillbook: Nursing Critically Ill Patients, "Chronic Renal Failure" pp. 39-50.

_______ 2. Review shunt care in a nursing procedure text.

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Student Competency Guide

Unit VI: Urinary Obstruction
Module B: Renal Failure

Renal Dialysis Unit

Objectives:

At the completion of this unit of experience, the student will be able to:

1. Review the Anatomy and Physiology of the normal kidney.
2. Recognize abnormal laboratory values found in renal failure and compare them to normal values.
3. State the two basic types of renal failure.
4. Research the major causes of renal failure.
5. List methods used to detect renal failure.
6. Identify symptoms of acute and chronic renal failure.
7. Compare the conservative and dialysis methods of managing renal failure.
8. Investigate how patients are selected for dialysis.
9. Study the various types of hemodialysis equipment.
10. Review the nursing responsibilities while patients are receiving hemodialysis.
11. Give care to selected patients under guidance of dialysis unit nurses.
12. Recognize the psychosocial impact of renal failure on selected patients.

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Student ____________________

Date: ____________________

RENAL DIALYSIS UNIT
Nursing Care Plan

Patient's Initials: __________ Age: ______ Sex: M F Marital Status ________

Laboratory Findings: Include blood values, urinalysis if available, x-ray, etc.

Normal Values:	Your selected patient's values:

Brief sketch of patient: Include history, pathology, probable prognosis

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Renal Dialysis Care Plan

Nursing Goals and Responsibilities during Dialysis

Patient's psychological reaction to chronic illness	Evaluate your reaction to the Dialysis Unit

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Teachers Guide

Unit VI: Urinary Obstructions
Module B: Renal Failure

Bibliography:

1. Nursing Skillbook: Nursing Critically Ill Patients - "Renal Failure".
2. Dolan, Renal Failure and Peritoneal Dialysis", NSG 75, July, p. 41.
3. Cianci, "Organ Transplantation", AJN, March 81, p. 544.

Key:

1. A-V Shunt = external tubing shunts blood from artery to a vein; can be used immediately as an access for dialyzing machine.
   Fistula = Internal shunting of blood from artery to vein; punctured with a needle for dialyzing; requires weeks to months to use for dialyzing.

2. Precautions in shunt care:
   1. No blood pressures
   2. No venipunctures
   3. Avoid constricting clothing
   4. Bulldog clamps on dressing
   5. Avoid turning patient on shunt arm
   6. Check patency of shunt periodically
   7. Aseptic dressing change (using masks)

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Unit VI: Urinary Obstruction

Competency Exam

Directions: Circle the best answer.

Infection

1. The organism most often responsible for urinary tract infection is:
   a. escherichia coli.
   b. candida albicans.
   c. staphylococcus aureus.
   d. enterobacter aerogenes.

2. Most cases of cystitis are the result of:
   a. an infection elsewhere in the body.
   b. congenital strictures in the urethra.
   c. an ascending infection from urethra.
   d. stasis of urine in the bladder.

3. To help prevent urinary infections by increasing urine acidity, which of the following is recommended?
   a. apple juice
   b. milk
   c. cheese
   d. carrots

4. Treatment of urinary tract infections usually includes:
   1. hospital admission for observation and control of infection.
   2. identification and removal of contributing factors.
   3. using appropriate measures to combat infection.
   4. increasing fluid intake.

   a. all but 1
   b. all but 2
   c. all but 3
   d. all but 4

5. Diagnosis of cystitis is made by:
   1. culture and sensitivity of organism.
   2. physical exam.
   3. urinalysis.
   4. patient history.

   a. 1,2
   b. 1,3
   c. 2,3
   d. all of above

Calculi

6. Mrs. C., 45, was admitted with renal calculi. She is diagnosed from an IVP with a L kidney pelvis stone with hydronephrosis. If hydronephrosis goes untreated, nephritis is likely to develop due to:
   a. low acidity of the urine.
   b. stagnation of urine in renal pelvis.
   c. impaired circulation to renal pelvis.
   d. poor filtration of blood to nephrons.

7. Which is the least likely to have predisposed her to renal calculi?
   a. several urinary infections.
   b. less milk intake in diet than recommended.
   c. prolonged bed rest following an accident.
   d. residence in southwester United States.

8. Pain resulting from renal calculi is most often referred from the region of the affected kidney to the:
   a. other kidney and the back.
   b. coccyx and buttocks.
   c. genitalia and bladder.
   d. umbilicus and episgastric area.

9. A patient that tends to form uric acid kidney stones will need teaching in the following except:
   a. high protein foods to increase acidity of urine.
   b. taking Zyloprin (allopurinal) each day to prevent stone formation.
   c. maintain fluid intake day and night.
   d. eat fruits and vegetables to alkalinize the urine.

10. One major complication that can occur with a ureteral calculi is:
   a. hematuria.
   b. elevated urine pH.
   c. hydronephrosis.
   d. elevated BUN.

Obstruction

11. When the kidneys are damaged:
   a. the ability to concentrate or dilute urine is impaired.
   b. sodium and potassium are no longer excreted in the urine.
   c. the ability to conserve products of metabolism is poor.
   d. the urine becomes concentrated

12. The urologic patient is observed for edema, especially:
   a. peripheral edema.
   b. edema of the fingers.
   c. periorbital edema.

13. The most common early symptom of a malignant bladder tumor is:
   a. suprapubic pain.
   b. fever.
   c. painless hematuria.
   d. pain on urination.

14. An ileal conduit is a form of urinary diversion in which:
    - a. the ureters are implanted into the ileocecal junction.
    - b. the ureters are implanted into the colon.
    - c. an isolated segment of ileum is used as a urinary reservoir.
    - d. a segment of ileum is anastomosed to the bladder and acts as a reservoir.

15. Which of the following statements best describes the nurse's understanding of the Bricker's Diversion? (ileal conduit)
    1. It serves as a bladder substitute.
    2. Urine and fecal discharges are separated.
    3. Urinary drainage contains mucous.
    4. Continuous use of pouch is required.

    - a. 1,3
    - b. 2,4
    - c. 2,3,4
    - d. all of the above

16. Mrs. Walker is to have surgery for an ileal conduit. Postoperatively it would be normal for Mrs. Walker to excrete urine containing:
    - a. pus
    - b. feces.
    - c. blood.
    - d. mucus.

17. The nurse teaches Mrs. Walker to empty her collecting device when it contains 100 ml of urine. The primary reason being that if the bag becomes too full it will:
    - a. rupture the ileal conduit.
    - b. suppress production of urine.
    - c. cease to drain urine.
    - d. not adhere to the skin.

18. To prevent urine leakage when changing the collecting bag, Mrs. Walker should:
    - a. insert gauze wick into stoma.
    - b. close the opening with cellophane.
    - c. suction the conduit before changing bag.
    - d. withhold oral fluids for several hours before changing bag.

19. In a Ureterosigmoidostomy diversion there is danger of:
    - a. microorganisms getting into the ureter and pelvis.
    - b. absorption of urine through the bowel mucosa.
    - c. high blood urea due to poor absorption of urea in the bowel.
    - d. fluid retention in the pelvis.

20. Patients in renal failure need to reduce their protein intake. What is the minimum daily protein required for tissue repair and maintenance?
    - a. 40 G daily
    - b. 30 G daily
    - c. 20 G daily
    - d. 10 G daily

21. The most common cause of acute renal failure is:
    - a. renal calculi..
    - b. exposure to nephrotoxic agents.
    - c. congenital anomalies.
    - d. chronic pyelonephritis.

22. The usual symptom of acute renal failure is:
    - a. polyuria.
    - b. oliguria.
    - c. nocturia.
    - d. all of these.

23. In chronic renal failure, acidosis develops due to the kidney's:
    - a. reabsorption of carbon dioxide.
    - b. excretion of sodium bicarbonate.
    - c. secretion of ammonian ions.
    - d. retention of hydrogen ions.

24. The uremic syndrome includes which of the following symptoms?
    - a. Nausea and vomiting.
    - b. Anemia.
    - c. Muscle twitching.
    - d. a and b only
    - e. all of these are correct

25. Ms. Janter was admitted in acute renal failure with nausea and vomiting. Her CBC showed Hgb 8, Hct 28, BUN 50 mg., and she has had a weight loss of 10 pounds. Her BUN was elevated due to:
    - a. increased edema of extremities.
    - b. decreased metabolic rate.
    - c. hemolysis of RBC.
    - d. increased protein catabolism.

26. Her doctor orders Kayexalate retention enema for elevated serum potassium. This is given because of its ability to:
    - a. remove protein wastes of metabolism.
    - b. release hydrogen ions for sodium ions.
    - c. exchange sodium for potassium ions.
    - d. increase calcium absorption.

27. Peritoneal dialysis is ordered for Mrs. Janter to remove excess extracellular fluid. To reach this goal, in relation to concentration, the dialyzing solution should be:
    - a. isotonic.
    - b. hypotonic.
    - c. hypertonic.

28. Which of the following interventions would help most to promote drainage of the dialyzing solution?
    - a. Keep patient flat in bed.
    - b. Turn from side to side.
    - c. Elevate height of dialysate bottle.
    - d. Apply external pressure to lower abdomen.

29. Which of the following is not an advantage of peritoneal dialysis?
    a. It doesn't require complex machinery and specialized personnel.
    b. Heparinization isn't necessary.
    c. It's the most rapid and efficient method of dialysis.
    d. It can be done immediately.

30. The aim of dialysis is to:
    a. remove metabolic waste products from the body.
    b. increase the amount of circulating blood volume.
    c. remove uremia frost from the skin.
    d. improve the patient's lethargic state.

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Unit VI: Urinary Obstruction

Competency Exam

Directions: Circle the best answer.

Infection

1. The organism most often responsible for urinary tract infection is:
   - [✓ a.] escherichia coli.
   - b. candida albicans.
   - c. staphylococcus aureus.
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    c. high blood urea due to poor absorption of urea in the bowel.
    d. fluid retention in the pelvis.

20. Patients in renal failure need to reduce their protein intake. What is the minimum daily protein required for tissue repair and maintenance?
    a. 40 G daily
    b. 30 G daily
    [✓ c.] 20 G daily
    d. 10 G daily

21. The most common cause of acute renal failure is:
a. renal calculi..
b. exposure to nephrotoxic agents.
c. congenital anomalies.
[✓ d.] chronic pyelonephritis.

22. The usual symptom of acute renal failure is:
a. polyuria.
[✓ b.] oliguria.
c. nocturia.
d. all of these.

23. In chronic renal failure, acidosis develops due to the kidney's:
a. reabsorption of carbon dioxide.
b. excretion of sodium bicarbonate.
c. secretion of ammonian ions.
[✓ d.] retention of hydrogen ions.

24. The uremic syndrome includes which of the following symptoms?
a. Nausea and vomiting.
b. Anemia.
c. Muscle twitching.
d. a and b only
[✓ e.] all of these are correct

25. Ms. Janter was admitted in acute renal failure with nausea and vomiting. Her CBC showed Hgb 8, Hct 28, BUN 50 mg., and she has had a weight loss of 10 pounds. Her BUN was elevated due to:
a. increased edema of extremities.
b. decreased metabolic rate.
c. hemolysis of RBC.
[✓ d.] increased protein catabolism.

26. Her doctor orders Kayexalate retention enema for elevated serum potassium. This is given because of its ability to:
a. remove protein wastes of metabolism.
b. release hydrogen ions for sodium ions.
[✓ c.] exchange sodium for potassium ions.
d. increase calcium absorption.

27. Peritoneal dialysis is ordered for Mrs. Janter to remove excess extracellular fluid. To reach this goal, in relation to concentration, the dialyzing solution should be:
a. isotonic.
b. hypotonic.
[✓ c.] hypertonic.

28. Which of the following interventions would help most to promote drainage of the dialyzing solution?
a. Keep patient flat in bed.
[✓ b.] Turn from side to side.
c. Elevate height of dialysate bottle.
d. Apply external pressure to lower abdomen.

29. Which of the following is not an advantage of peritoneal dialysis?
    a. It doesn't require complex machinery and specialized personnel.
    b. Heparinization isn't necessary.
    [✓ c.] It's the most rapid and efficient method of dialysis.
    d. It can be done immediately.

30. The aim of dialysis is to:
    [✓ a.] remove metabolic waste products from the body.
    b. increase the amount of circulating blood volume.
    c. remove uremia frost from the skin.
    d. improve the patient's lethargic state.

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Competencies.

Unit VII: Probelms of Neuro-Muscular-Skeletal Systems

I. Neuro-chemical disruptions
  A. State the types of seizures and nursing interventions for a patient on seizure precautions.
  B. Relate teaching needs for a newly-diagnosed patient with epilepsy.

II. Intracranial Pressures (IICP)
  A. State signs of IICP.
  B. List specific nursing care for an unconscious patient.
  C. State the types of disruptions that cause CVA's.
  D. Identify nursing interventions for acute care of CVA patients and also rehabilitation phase.

III. Degenerative Disease
  A. Describe the pathology behind Parkinson, Myasthemia Gravis, Muscular Dystrophy and Multiple Sclerosis.
    1. Relate specific nursing interventions for each.
    2. Select appropriate actions and side effects of common medications used.

IV. Mobility Disruptions
  A. Identify assessments and nursing interventions for spinal cord injury.
    1. Describe spinal shock.
  B. Identify types of traction and nursing interventions for each.
  C. Describe postoperative care for a patient with a fractured hip having an open reduction.
  D. Compare and contrast osteoarthritis and Rheumatoid arthritis.
    1. Identify specific teaching needs for rehabilitation of each.
  E. Assessment of a Client With Pain
    1. State factors that influence a client's perception of pain.
    2. List various methods to relieve intractable pain.
    3. Compare and contrast various types of analgesics and their appropriate use.
    4. Relate appropriate nursing interventions in helping clients deal with pain.

V. Impairment of Special Senses
  A. Relate examples of sensory deprivation and overload in the hospitalized elderly.
    1. Identify at least three stressors which percipitate alterations in auditory and visual perceptions.
    2. Identify nursing interventions that alleviate or minimize stressors that create sensory deprivation or overload.

V. (cont'd)

B. List five behaviors that elderly clients may exhibit with impaired vision.
C. Relate the visual effects of glaucoma and cataract on a patient.
    1. State postoperative nursing care with eye surgery.
D. Identify nursing measures for the blind or deaf that incorporate safety and respect for the client.
E. State postoperative needs of patient's having stapedectomy.

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Student Competency Sheet

Unit VII: Problems of The Neuro-Muscular System
Module A: Cerebral Vascular Accident (CVA)

Competency: Identification of problems and interventions with a patient with CVA.

Performance Objective: The student will identify the following for a CVA patient:

1. Assessment of signs and symptoms, risk factors.
2. Probems and priorities.
3. Goals and interventions (acute and rehabilitative).
4. Diagnostic tests.
5. Discharge planning.

Suggested Learning Activities:

_______ 1. Read Shafer's 826-832, 802-808, 786-792.

_______ 2. Complete case study for CVA.

_______ 3. Define: Agnasia
Apraxia
Aphasia
Ataxia

Evaluation: Answers study guide questions with 75% accuracy.

Extended Learning Activities:

_______ 1. Read: Riehl, "Better Salvage For The Stroke Victim", NSG 76 July, p. 24-31.

_______ 2. Practice neuro assessment on a hospitalized patient with some neuro deficits.

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CASE STUDY

Unit VII: Problems of the Neuro-System
Module A: CVA

Cerebrovascular Accident

Mr. S. is a 59 year old white male admitted to a neurological ICU. He was brought into the ER this morning by an ambulance accompanied by his wife. He has left sided hemiplegia, left facial paralysis and expressive aphasia. Mrs. S. relates that these deficits were present when Mr. S. awoke this morning. Mr. S. is awake and seems alert, in spite of his neurologic deficits. His vital signs are: blood pressure: 160/100, temperature: 98.6 F, pulse: 90 and regular, and respirations: 18 and regular.

1. Assessment of which client behaviors is necessary to plan care for this client?
2. What are the problems and priorities in caring for Mr. S.?
3. What nursing goals and interventions are appropriate for this phase of Mr. S.'s illness?
4. Based on his neurologic deficits, what is the most likely location of his lesion?
5. What diagnostic tests might be ordered to determine the cause of Mr. S.'s neurological impairment?
6. As the nurse admitting Mr. S. to the ICU, what further questions would you ask the client or his wife to obtain a more complete assessment?

In speaking with Mrs. S. you learn that she and Mr. S. have been married for 30 years and have two grown children living in another part of the country. Mr. S. is an attorney in a large law firm. He works approximately 60 hours per week and has little time for relaxation or interests other than work. He smokes 2 packs of cigarettes per day and drinks a moderate amount of alcohol on social occasions.

He had been told by his family physician on his last physical examination that he had high blood pressure and high cholesterol. He was encouraged to lose weight and limit his salt and saturated fat intake at that time. His physician also suggested that he modify his work schedule and plan for periods of rest and relaxation. Mr. S. did not follow these suggestions and did not return for a follow up visit because he was "too busy" with his work. A week prior to his admission Mr. S. had an episode of weakness on his left side which he attributed to fatigue.

1. What risk factors for a CVA does Mr. S. have? Are there other risk factors which could be identified?

2. What could the episode of weakness that Mr. S. experienced indicate?

3. Based on his history and onset of his neurological deficit, what is the most likely cause of Mr. S.'s CVA?

Mr. S.'s general physical condition stabilized quickly and within one week he has transferred to a general medical unit. Mr. S. is still having difficulty expressing his needs which is very frustrating to him. He understands questions and is able to respond to yes and no questions. Mr. S. weighs 220 pounds and is 6 feet tall. He is still unable to move his left arm or leg. He does not bathe himself, but he is able to feed himself at this time. He has no respiratory, skin, bladder, or bowel problems. He has a visual field loss on the left side bilaterally.

1. Following the acute phase of his CVA, what priorities would be appropriate in caring for Mr. S.?

2. What nursing goals and interventions are appropriate in the rehabilitation phase of care? What specific interventions would you plan in dealing with Mr. S.'s aphasia and hemiplegia.

3. Where in the optic tract is the most likely location of Mr. S.'s lesion based on his visual deficit? What measures would be appropriate in caring for a client with such a deficit?

4. Based on his initial recovery, what is Mr. S.'s prognosis for futher improvement of his neurologic impairment? What information would be most helpful for Mr. S. and his family regarding his recovery during the rehabilitation phase of his illness?

5. What kind of discharge planning would you initiate in caring for Mr. S.?

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Teachers Guide

Unit VII: Problems of Neuro-Muscular Systems
Module A: CVA

Teaching Activities:

1. Present "Glascow Coma Scale" (*AJN* Sept. '79, p. 1551) to class.
2. Have students assess a patient and hand in total points, identifying abnormalities

   or

   apply neuro assessment tool from outline and practice assessment skills.
3. Go over CVA case study in class.
4. Give Pretest in *Neurological Nursing*.

WOR-WIC TECH COMMUNITY COLLEGE
DEPARTMENT OF NURSING PROGRAMS
AT DORCHESTER GENERAL HOSPITAL

Pre-test in Neurological Nursing
Nur. 202

Name: ______________________

Date: ______________________

Situation: Mr. Harris, a forty year old white male, was admitted to the hospital following an automobile accident. A tentative diagnosis of "fracture of the right temporal parietal bones" and "concussion of right cerebral hemisphere" was made.

Directions: Place a check mark (✓) to the left of the statement which most correctly completes the statement.

1. A concussion is:

   _____ a. temporary unconsciousness, without fracture or laceration, caused by a blow on the head.

   _____ b. unconsciousness resulting from intracranial pressure.

   _____ c. a lesion produced due to trauma to the head.

   _____ d. a sign of hemorrhage into the brain.

2. Upon examination, Mr. Harris was found to be semi-stuporous. This means he:

   _____ a. can be aroused but prefers to sleep.

   _____ b. responds to painful stimuli with some degree of vocal response.

   _____ c. responds to painful stimuli but not vocally.

   _____ d. does not respond to any stimuli.

3. Increased intracranial pressure may be defined as any undue pressure exerted against the brain substance. Signs indicative of increased intracranial pressure are:

   _____ a. increased pulse rate, decreased blood pressure, decrease in respiratory rate.

   _____ b. increased pulse rate, decreased blood pressure, increase in respiratory rate.

   _____ c. decreased pulse rate, increased blood pressure, decreased respiratory rate.

   _____ d. decreased pulse rate, increased blood pressure, increased respiratory rate.

4. The nursing care of the patient with increased intracranial pressure may include all of the following except:

_____ a. close observation of vital signs.

_____ b. shock position.

_____ c. limited fluid intake.

_____ d. prevention of straining.

5. Which of the following diagnostic tests would not be done on a patient with increased intracranial pressure?

_____ a. Arteriogram.

_____ b. Lumbar puncture.

_____ c. Pneumonencephalogram.

_____ d. Ventriculogram.

MATCHING QUESTIONS

Directions: To the Left of the item in Column I, place the letter of the item in Column II which is most appropriate.

Column I

_____ 1. Inability to understand spoken language.

_____ 2. Inability to recall without loss of intelligence.

_____ 3. Inability to carry out a movement in the absence of paralysis (loss of habit).

_____ 4. Inability to recognize things.

_____ 5. Inability to write.

Column II

A. Agnosia

B. Aphasia

C. Apraxia

D. Ataxia

E. Expressive Aphasia

F. Intellectural deficit

Column I

_____ 1. Insertion of a needle in median line below occipital bone.

_____ 2. Injection of air into subarachnoid space.

_____ 3. Injection of air into lateral ventricles.

_____ 4. Insertion of dye into spinal cord.

Column II

A. Arteriogram

B. Cisternal puncture

C. Lumbar puncture

D. Myelogram

E. Pneumonencephalogram

F. Quickenstedt Test

G. Ventriculogram

Column I

_____ 1. Nuchal rigidity.

_____ 2. Swelling of optic nerve.

_____ 3. Hyperthermia.

_____ 4. Inequality in diameter of pupils.

_____ 5. Tonic - Clonic contractions.

Column II

A. Anioscoria

B. Decussation

C. Grand mal seizure

D. Hypothalamic irritation

E. Jacksonian seizure

F. Meningeal irritation

G. Papilledema

H. Petit mal seizure

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Student Competency Sheet

Unit VII: Problems of Muscular-Skeletal Systems
Module B: Mobility Disruptions

Competency: To identify problems of fractures and spinal cord treatments.

Performance Objective: The student will identify signs, symptoms, treatment, and nursing care involved with fractures, open reduction of hip fractures, and hip replacement, osteomyelitis, and common spinal column problems.

Suggested Learning Activities:

_______ 1. Read Shafer's: 847-9, 755-760, 837-47, 767-80.

_______ 2. Fill in data on Mobility Disruption from class theory and textbook information.

Evaluation: Completes Mobility Study Guide with adequate information in each section.

Extended Learning Activities:

_______ 1. Read: White, J. "Rheumatology Nursing" NSG '79 Oct. p. 108.
NCNA: "Orthopedic Nursing", December '76.

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Study Guide

Unit VII: Problems of Muscular-Skeletal Systems

MOBILITY DISRUPTIONS

I. Fractures

A. Definition

B. Types and Implications

C. Complications

D. Fracture healing
1. Normal

2. Abnormal

E. Open reduction
1. Fractured hip
a. Types

b. Pre-op nursing care

E. (cont'd)

c. Post-op nursing care

II. Total Hip Replacement
A. Indications

B. Pre-op nursing care

C. Intraoperative

D. Post-op nursing care

E. Complications

F. Discharge teaching

III. Osteomyelitis

A. Definition

B. Organisms

C. Signs and Symptoms

D. Treatment

E. Complications

IV. Spinal Column Problems
A. Herniated Discs
1. Pathology

2. Clinical symptoms

3. Conservative treatment

IV. (cont'd)

B. Laminectomy - Nursing Care

C. Spinal fusion
   1. Bone grafting

   2. Harrington rodding

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Teachers Guide

Unit VII: Problems of Muscular-Skeletal System
Module B: Mobility Disruptions

Teaching Activities:

1. Plan trip to Good Samaritan Hospital, Baltimore, Maryland to visit Rheumatology Nurse.
2. Reemphasize sensory overload and deprivation in aged with eye and ear disruptions.

Bibliography:

1. Gresh, "Parkinson's Disease" NSG 80 January, p. 26.
2. Dupont, J. "What To Do For Common Eye Emergencies", NSG '76, May, p. 17-19.
3. Monk, "Examining The Eye-Part I" NSG 80, May p. 58.
   "Examining The Eye-Part II" NSG 80, June p. 58.

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Student Competency Sheet

Unit VII: Problems of Muscular-Skeletal Systems
Module C: Mobility Disruptions

Competency: Identify problems of an aged patient having hip arthroplasty.

Performance Objective:

The student will:
1. Recognize health problems related to the aging process.
2. Design a nursing care plan for a fractured hip with open reduction surgery - 7 days post-op.
3. Develop a teaching plan for alteration in mobility.

Suggested Learning Activities:

_______ 1. Read: Shafer's: 764-784.

_______ 2. Complete a care plan from case study provided including a problem from developmental stage and teaching needs.

Evaluation: Identifies at least 4 problems including the aging process and teaching needs.

Extended Learning Activities:

_______ 1. Read: Jennings, K. "The Cheerful Operation: Total Hip Replacement" NSG '76, p. 33-37.

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Student Competency Guide

Unit VII: Problems of Muscular-Skeletal Systems
Module C: Mobility Disruptions

Directions: Incorporate the following data into a care plan that identifies pertinent problems of the patient. Number or place in priority order.

Data: Mary Papp is a 80 year old retired school teacher with osteoarthritis. She has a fractured hip and had an open-reduction done 7 days ago with a Smith-Peterson nail inserted. She has hypertension controlled by a low-sodium diet. Her arthritis effects her fingers, knees, and spine causing stiffness and Heberden's nodes and is treated with aspirin, heating pad and Motrin. She maintained independent ADL prior to the fracture, living alone in an apartment.

PROBLEMS	GOALS	NURSING INTERVENTIONS	METHOD OF EVALUATION

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Teachers Guide

Unit VII: Problems of Muscular Skeletal Systems
Module C: Mobility Disruptions

Teaching Activities:

1. Discuss aging process and limitations to activity (sight, hearing, etc.).

Bibliography:

1. Article on "Total Hip Replacement" (NSG '76) by Jennings, gives pictures of prosthesis in place, preop care, family concerns, complications, activity post-op, and discharge planning. Excellent overview.
2. Wardell, S. Acute Intervention: "Alteration in Mobility", Reston Co., 1979, p. 346.

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Unit VII: Neuro-Muscular-Skeletal

Competency Exam

Impairment of Special Senses

1. A slow and barely perceptible decline in physical ability begins_______.
   a. around age 18 to 20
   b. at age 40
   c. in the mid-50's
   d. at age 65

2. The nurse can improve communication with a hard of hearing patient by __________.
   a. speaking very loudly
   b. speaking slowly and clearly
   c. gesturing with the hands
   d. being as pleasant and brief as possible

3. The elderly may have difficulty in adjusting to temperature extremes. It is harder for the elderly patient to adjust to a cool or cold temperature because his __________.
   a. clothes fit more loosely and therefore do not conserve body heat
   b. metabolism is slower
   c. food intake is less
   d. awareness of the change im temperature is decreased

4. Hearing is usually most acute at the age of __________.
   a. 14
   b. 25
   c. 40
   d. 60

5. Though it may vary considerably with different individuals, menopause usually occurs between the ages of __________ and _________ .
   a. 35 and 45
   b. 45 and 55
   c. 55 and 65
   d. 65 and 70

6. The loss of hearing which occurs as a result of age is called ____________.
   a. mastoiditis
   b. presbyopia
   c. presbycusis

7. The term blindness is used for many legal purposes when central visual acuity is_____.
   a. one-half normal vision
   b. one-fifth normal vision without corrective lenses and one-half with corrective lenses
   c. 10/100 in the better eye with a corrective lens
   d. 20/200 or less in the better eye even when corrective lenses are worn

8. The refractive media of the eyes are the ________.
   1. lens
   2. retina
   3. vitreous body
   4. ciliary body
   5. aqueous humor

   a. 1,2,4
   b. 1,3,5
   c. 2,3,4
   d. 2,3,5

9. Symptoms of acute glaucoma include _________.
   1. severe pain in and around the eye
   2. blurred vision
   3. excess formation of tears
   4. fever
   a. 1,2
   b. 1,3
   c. 2,3
   d. 2,4

10. In a detached retina __________.
    a. all layers of the retina pull away from the choroid
    b. the sensory layer becomes separated from the pigmented layer
    c. the retina and choroid become detached from the muscle coat of the eye

11. Symptoms of detached retina include _________.
    1. feeling that a curtain is being drawn over the field of vision
    2. spots or moving particles before the eyes
    3. gaps in the vision
    4. flashes of light

    a. 1,2
    b. 1,3
    c. 2,3
    d. all of these

12. After surgery on the eye, there may be an order for an enema or gentle laxative because __________.
    a. the patient has not been out of bed to the bathroom for several days.
    b. drugs used prior to eye surgery often cause constipation.
    c. straining at stool must be avoided.
    d. the soft diet necessary after surgery leads to constipation.

13. Conduction deafness is caused by any disease or injury _______.
    a. to the auditory nerve
    b. that interferes with the conduction of sound waves to the inner ear
    c. to the external ear and eardrum
    d. to the cochlea

14. Select the correct progression describing the transmission of sound from the outer to the inner ear ____________.
    a. tympanic membrane-malleus-incus-stapes-oval window
    b. tympanic membrane-incus-malleus-stapes-oval window
    c. tympanic membrane-incus-stapes-malleus-oval sindow

15. The middle ear connects with the nasopharynx by way of the _________.
    a. tympanic membrane
    b. external auditory canal
    c. eustachian tube
    d. auditory tube

16. In serous otitis media_________.
    a. infection occurs in the outer auditory canal and middle ear
    b. the inner ear becomes filled with fluid
    c. the bones of the middle ear fuse
    d. fluid forms in the middle ear

17. The Valsalva maneuver is a way of ___________.
    a. releasing the pressure in the middle ear by creating a minute hold in the tympanic membrane
    b. equalizing pressure on both sides of the eardrum
    c. freeing the fused bones of the middle ear
    d. increasing pressure in the middle ear

18. The treatment of serous otitis media is surgical, by means of a __________.
    a. stapedectomy
    b. myringotomy
    c. tympanectomy
    d. myringoplasty

19. If facial paralysis occurs 12 to 24 hours after surgery on the ear, it is probably caused by __________.
    a. injury to the nerve
    b. edema at the site of surgery
    c. the external dressing being too loose
    d. the dressing in the ear canal being saturated with drainage

20. Meniere's disease is characterized by_________.
    1. facial paralysis
    2. tinnitus
    3. purulent drainage from the ear canal
    4. severe vertigo
    5. progressive hearing loss

    a. 1,2,4
    b. 1,3,5
    c. 2,3,4
    d. 2,4,5

Mrs. Collins, age 71, is admitted for cataract surgery. Both eyes are affected; however, the surgeon is going to operate on her right eye first and on her left eye in a few months. (Questions 21 to 24 refer to Mrs. Collins).

21. A cataract is a condition in which the __________.
    a. lens of the eye becomes opaque thus reducing the amount of light reaching the retina
    b. ciliary muscles no longer expand and contract thereby reducing the amount of light transmitted through the lens
    c. retina degenerates, resulting in an increased loss of vision
    d. vitreous humor and lens are unable to transmit light because of the development of scar tissue

22. Cataract surgery involves _________.
    a. removal of the lens
    b. removal of the lens and ciliary body
    c. cutting a window into the lens and iris
    d. removal of the vitreous humor

23. Two major complications of cataract surgery are _______.
    a. hypotension and loss of the contents of the lens capsule
    b. loss of vision and increased intraocular pressure
    c. loss of vitreous humor and hemorrhage
    d. paralysis of the iris and hypertension

24. To prevent hemorrhage during the postoperative period, special care is taken to __________.
    a. keep the operative eye covered to prevent tearing of the sutures
    b. keep proper pressure applied to the eyeball by reinforcing the dressing as it becomes loose
    c. keeping the patient on his unoperative side
    d. prevent straining and any suddent movement of the head

Mr. Wilson was diagnosed as having glaucoma at the time of his last eye examination. Eyedrops were prescribed for him and he was advised to have his eyes re-examined every 6 months. (Questions 25 & 26 refer to Mr. Wilson.

25. Glaucoma is a(n) ________.
    a. disease of the eye resulting from an infection in the anterior chamber
    b. disorder involving the vitreous humor and retina
    c. absence of acqueous humor in the anterior chamber
    d. condition resulting from increased intraocular pressure

26. Mr. Wilson is diagnosed as having chronic glaucoma. In this case, the symptoms of glaucoma _____________.
    a. will include pain which is usually severe
    b. may be absent
    c. do not appear until the glaucoma becomes acute
    d. cannot be controlled with medication

Mrs. Hunt, 32 years of age and the mother of 3 children, has had a progressive hearing loss for 2 years. After a thorough evaluation of her hearing loss she is diagnosed as having otosclerosis. Surgery has been recommended and she is admitted for a stapedectomy. (Questions 27 to 30 refer to Mrs. Hunt).

27. Otosclerosis results from ________.
    a. bony ankylosis of the stapes
    b. fixation of the stapes on the round window
    c. fixation of the malleus on the tympanic membrane
    d. bony deposits on the malleus and incus

28. Following surgery, Mrs. Hunt complains of nausea and dizziness. These complaints are ____________.
    a. an indication that pressure in the ear is increasing and the patient will need to return to surgery
    b. not unusual and do occur after ear surgery
    c. an indication that the surgery is a failure

29. The surgeon orders Mrs. Hunt out of bed with assistance. The packing has been removed from the outer ear and a small cotton plug inserted. Mrs. Hunt states that she still cannot hear any better than before surgery. As a nurse you know that __________.
    a. this means the surgery will not help her hearing
    b. hearing improvement may take more time
    c. Mrs. Hunt can hear better, but is so used to a hearing loss it will take time for her to adjust to her improvement
    d. additional surgery will probably be necessary

30. The surgeon cautions Mrs. Hunt against blowing her nose suddenly or violently because this action could ________.
    a. rupture the tympanic membrane/malleus junction
    b. decrease pressure in the middle ear and thus interfere with the healing process
    c. increase drainage from the outer canal
    d. dislodge the prosthesis

Fractures

31. After a fracture, the muscles surrounding the bone go into spasm causing ________.
    a. increased deformity and interference with the vascular and lymphatic circulation
    b. a second fracture
    c. relief from the pain that occurred at the time of the fracture
    d. decreased deformity and increased interference with circulation

32. Nursing measures that promote adequate circulation in the fracture area encourage ___________.
    a. interference with the deposit of calcium in the bone
    b. loss of calcium from the bone, which is necessary in the healing of the fracture
    c. healing of the bone

33. The administration of correct first aid after a fracture is extremely important. Control of bleeding from the wound of an open fracture is initially accomplished by ___________.
    a. application of a tourniquet above and below the area of injury
    b. alignment of the extremity and application of pressure with the palm of the hand above the area of injury
    c. direct pressure applied to the bleeding wound with a sterile dressing and a pressure bandage
    d. application of a dry sterile dressing

34. Skin traction ___________.
    a. is a type of traction using wire, pins, ropes, and weights
    b. utilizes pullon tapes or traction strips attached to the skin
    c. is only used for fractures of the arm
    d. utilizes braces and slings to provide pull in the opposite direction

35. Skeletal traction __________.
    a. uses a wire pin inserted in the bone with pull applied to the pin or wire
    b. is only used on the lower extremity
    c. is only used for simple and greenstick fractures
    d. uses tapes or traction strips attached to ropes to provide pull in the opposite direction

36. A principle of traction, that is traction and countertraction, means __________.
    a. a force applied against another force
    b. two forces pulling away from a center
    c. a pulling force alternating with a release of force
    d. the application and release of weights

37. A complication of prolonged bed rest and limited fluid intake is _________.
    a. edema
    b. kidney stones
    c. poor circulation
    d. decubitus ulcers

38. The patient with a fracture of the spine is usually placed in a position of ________.
    a. abduction
    b. adduction
    c. hyperextension
    d. hypoextension

39. In crutch walking, the weight is carried on the hands, not the axillae. The patient who carries weight on his axilla rather than his hands may _________.
    a. place an extra strain on the muscles of his arms
    b. not be able to use a swing-through crutch gait
    c. develop abrasions on his hands
    d. injure the brachial plexus

Mr. Brown, age 61, is in Russell traction for a fracture of his right femur - a bone in the upper leg. The traction was applied 3 days ago and he has been cooperative in assisting the nurses with his care. He is able to use a trapeze bar suspended over his bed as an aid in moving. (Questions 40 to 42 refer to Mr. Brown).

40. When checking Mr. Brown's traction the nurse must check the weights which should ________.
    a. be supported on a chair
    b. only be lowered every 2 hours
    c. be taped to the pulley and anchored to the bed frame
    d. hang free and not touch the bed

41. Mr. Brown asks if the head of his bed can be raised as high as possible because he wants to write letters. In this instance you would ________.
    a. raise the head of the bed to the position requested by Mr. Brown
    b. not raise the head of the bed as the bed is always kept flat
    c. check the physician's orders to see how high the head of the bed can be elevated
    d. call Mr. Brown's physician and ask what should be done

42. Mr. Brown's physician has ordered range-of-motion (ROM) exercises to be taught by the physical therapist. After Mr. Brown has learned how to do these exercises, the nurse should check to be sure he is exercising. These exercises are ordered for the _________.
    a. affected and unaffected extremities
    b. right leg only
    c. arms only as both legs must remain immobile
    c. left leg only

Mrs Willard, age 79, slipped on a small rug and fell, injuring her right hip. Her son found her several hours after the incident and called her physician who ordered an ambulance to transport her to the hospital. (Questions 43 to 45 refer to Mrs. Willard)

43. On arrival in the emergency room, Mrs. Willard was examined by a physician who determined that she probably had a fracture of her right hip. Signs of a hip fracture include ________.
    a. pain in the area and difficulty in walking
    b. weakness on the affected side and internal rotation of the leg
    c. shortening of the leg and external rotation of the leg and foot
    d. muscle spasm and a lengthening of the affected leg

44. Mrs. Willard required surgery with internal fixation of the fracture. The postoperative orders include turning her every 2 hours. To turn Mrs. Willard correctly__________.
    a. place a pillow lengthwise between her legs, keep the affected leg straight and turn the entire body in one movement
    b. elevate the head of the bed, raise the side rails and use pillows to support the patient while turning
    c. keep the bed flat, flex the affected leg and turn the patient onto the unaffected side
    d. place pillows under both hips, a small pillow under the knee of the operated leg, and turn the patient on either side

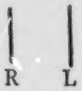
45. A complication of the internal fixation procedure is necrosis of the femur. If Mrs. Willard were to develop this complication, early recognition would be important. Early signs of necrosis of the femur are _________.
    1. pain
    2. paralysis
    3. swelling of the entire leg
    4. muscle spasm
    5. a limp while ambulating

    a. 1,2,3
    b. 1,4,5
    c. 2,3,4
    d. 2,4,5

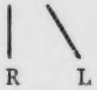
Mrs. Lane, age 48, has had severe arthritis of her left hip for 6 years. Due to severe arthritic degeneration, disabling pain, and severe limitation of movement in the hip joint, her physician has decided to perform a total hip replacement. (Questions 46 to 48 refer to Mrs. Lane).

46. Following surgery the physician orders Mrs. Lane's leg to be kept in an abducted position at all times. Which drawing illustrates an abducted position of the left (L) leg? ________

a.



b.



47. It is extremely important that the physician's order be followed. If the leg is not kept in the abducted position, the ________.
    a. femur may refracture
    b. patient may experience more than an average amount of postoperative pain
    c. prosthetic femoral head may dislocate from the acetabulum
    d. leg may shorten

48. While each patient is different, patients who have a total hip replacement usually begin ambulation 1 week after surgery. Prior to ambulation, Mrs. Lane will begin exercising the affected limb. Since the exercises will be painful ________.
    a. Mrs. Lane should be told that after she has performed the exercises a narcotic will be given.
    b. they are best done 1/2 to 1 hour after the administration of an analgesic
    c. the nurse should prepare the analgesic ordered by the physician and keep it at Mrs. Lane's bedside in case the pain becomes too severe

Arthritis

49. The onset of rheumatoid arthritis usually occurs over a period of time. Early signs of this disease include ________.
    1. immobility of a joint
    2. swelling and pain in the joints that come and go
    3. morning stiffness
    4. hypertension
    5. joint soreness

    a. 1,2,3
    b. 1,3,5
    c. 2,4,5
    d. 2,3,5

50. Treatment of rheumatoid arthritis is aimed at ________.
    1. preventing or correcting deformities
    2. curing the disease as quickly as possible
    3. making the patient more comfortable
    4. destroying the organism causing the disease

    a. 1,2
    b. 1,3
    c. 2,3
    d. 2,4

51. Braces, bivalve casts, or splints may be applied to joints that are painful or in spasm to help prevent ________.
    a. inflammation and swelling
    b. dislocations and deformities
    c. pain and fractures around the joint
    d. contractures and joint sprains

Mrs. Todd, a 59-year-old housewife, has had a right hip arthroplasty for an arthritic deformity. Prior to surgery, she had limited motion of the joint, along with moderate to severe discomfort when walking. Following surgery, she was placed in a balanced suspension traction. It is now her second postoperative day. Questions 52 to 55 refer to Mrs. Todd.

52. The surgeon orders a trochanter roll for Mrs. Todd's unoperated leg to prevent ___________.
    a. internal rotation
    b. external rotation
    c. hyperextension of her left knee
    c. footdrop

53. If a pillow is placed between Mrs. Todd's knees, it will prevent __________.
    a. accidental adduction
    b. accidental abduction
    c. external rotation of the leg
    d. hyperextension of the knee and ankle

54. A nursing assistant tells you that Mrs. Todd has asked to have the head of the bed raised. Your decision is to tell the nursing assistant __________.
    a. to raise the head of the bed
    b. to tell Mrs. Todd that you will call her physician later for an order to raise the head of her bed
    c. that you will explain to Mrs. Todd that, because of her surgery, the head of the bed will need to remain flat until her physician permits it to be raised

55. One of the other nurses states that she is not familiar with the nursing management of a patient with a hip arthroplasty and asks how long Mrs. Todd will remain in traction. Your answer is _________.
    a. 24 to 72 hours
    b. approximately 4 to 6 weeks
    c. usually 7 days
    d. approximately 3 weeks

Sandy, age 26, developed rheumatoid arthritis at 18. At present she has extensive damage to most of her joints, but particularly to her hands, wrists, hips and knees. Questions 56 to 58 refer to Sandy.

56. Sandy asks if she could take a buffered aspirin product as the plain aspirin has been causing nausea. Your response will be based on the knowledge that _______.
    a. only the physician can answer any question concerning her drugs
    b. aspirins are all alike and one can be substituted for another
    c. buffered aspirin contains an alkali and in high doses could cause an electrolyte imbalance

57. Sandy tells you that she is getting tired of taking drugs, is feeling better, and, therefore, is going to stop taking all medications. Your response is based on the knowledge that ________.
    a. relief of symptoms is a sign that the disease is improving and drug therapy should be discontinued
    b. consistent medical supervision and drug therapy is important even though the patient may feel good and have relief from pain and stiffness
    c. other drugs will probably be necessary but the aspirin should be continued until the physician has time to order other drugs

58. Sandy tells you that she has decided to take long, slow walks to keep her muscles and joints free from stiffness. Your response to this statement is based on the knowledge that _________.
    a. rest and exercise are important, but the physician's advice must be followed since too much or too little of each can be harmful
    b. exercise is necessary for all patients with rheumatoid arthritis, but all exercise must be done slowly
    c. walking is considered one of the best forms of exercise and will reduce the possibility of joint stiffness and deformity

Mrs. Carroll, age 63, has osteoarthritis--a degenerative joint disease. Although admitted to the hospital for other reasons, her arthritis has begun to cause discomfort. Questions 59 to 62 refer to Mrs. Carroll.

59. Mrs. Carroll's osteoarthritis is _________.
    a. rarely seen under the age of 65
    b. more common in women
    c. requently due to an earlier infectious process
    d. a reflection of the generalized aging process

60. Mrs. Carroll asks if her arthritis can either be cured or at least stopped from getting worse. Although this is a question a physician will answer, the nurse should know that osteoarthritis is _______.
    a. curable only if diagnosed early
    b. best treated with hot baths to prevent joint degeneration
    c. easily controlled with medications
    d. a progressive disease

61. Mrs. Carroll complains of stiffness and soreness, especially in the morning hours. To help Mrs. Carroll, the nurse should plan to ________.
    a. help her with exercises to loosen up her joints when she first gets out of bed
    b. allow her to complete her morning care at her own rate
    c. encourage her to do all her own care as this will prevent stiffness the next day
    d. tell her to stay in bed until the afternoon hours

62. Mrs. Carroll brought bedroom slippers to the hospital but did not bring shoes. To promote better foot and leg support the nurse should _________.
    a. suggest that Mrs. Carroll's family bring her shoes to the hospital
    b. tell Mrs. Carroll that she should not go barefoot and wear her slippers when out of bed
    c. suggest that her family purchase orthopedic arch supports for her slippers
    d. tell Mrs. Carroll to walk slowly and plant each foot firmly on the ground

Mr. Lewis, 56, years of age, has had gout for many years. Because he fails to adhere to the medication and dietary regimen prescribed by his physician, he occasionally has acute attacks of gout. (Questions 63 to 67 refer to Mr. Lewis.)

63. Purines are the end-products in the digestion of _________.
    a. fats
    b. carbohydrates
    c. certain types of proteins

64. The physician may diagnose Mr. Lewis' gout by __________.
    1. blood tests, particularly serum uric acid levels
    2. biopsy of the tissue around the joint(s)
    3. physical examination of the affected joint(s)
    4. x-ray examination of the affected joint(s)
    5. stool samples
    a, 1,2,5
    b. 1,3,4
    c. 2,3,4
    d. 2,4,5

65. Mr. Lewis has an acute attack of gout and his physician prescribes colchicine to be given hourly until ___________.
    a. his joints are less stiff and he can move without pain.
    b. his temperature returns to normal.
    c. pain, redness, and joint enlargement have disappeared.
    d. pain subsides or nausea, vomiting, diarrhea, or intestinal cramping occur

66. Although Mr. Lewis has not adhered to treatment in the past, he now states that the pain during this last attack was so severe he intends to follow his physician's orders. Future treatment will be aimed at ___________.
    a. raising Mr. Lewis' serum uric acid level
    b. making Mr. Lewis adhere to a medication schedule
    c. preventing future attacks and permanent joint damage
    d. curing the disease through intensive drug therapy

67. Mr. Lewis will be taking allopurinol (Zyloprim) once the acute phase of his attack has subsided. When this, as well as other drugs for gout, is taken, it is recommended that the patient increase his fluid intake to ___________.
    a. dissolve any stones that may form in the urinary tract
    b. reduce the possibility of urate stone formation in the kidney
    c. wash out any stones that may form

Wor-Wic Tech Community College Nursing Programs

Nur. 202

Unit VII: Neuro-Muscular-Skeletal

Competency Exam

Impairment of Special Senses

1. A slow and barely perceptible decline in physical ability begins________.
   - [✓ a.] around age 18 to 20
   - b. at age 40
   - c. in the mid-50's
   - d. at age 65

2. The nurse can improve communication with a hard of hearing patient by __________.
   - a. speaking very loudly
   - [✓ b.] speaking slowly and clearly
   - c. gesturing with the hands
   - d. being as pleasant and brief as possible

3. The elderly may have difficulty in adjusting to temperature extremes. It is harder for the elderly patient to adjust to a cool or cold temperature because his ___________.
   - a. clothes fit more loosely and therefore do not conserve body heat
   - [✓ b.] metabolism is slower
   - c. food intake is less
   - d. awareness of the change im temperature is decreased

4. Hearing is usually most acute at the age of __________.
   - [✓ a.] 14
   - b. 25
   - c. 40
   - d. 60

5. Though it may vary considerably with different individuals, menopause usually occurs between the ages of ___________ and _________ .
   - a. 35 and 45
   - [✓ b.] 45 and 55
   - c. 55 and 65
   - d. 65 and 70

6. The loss of hearing which occurs as a result of age is called ___________.
   - a. mastoiditis
   - b. presbyopia
   - [✓ c.] presbycusis

7. The term blindness is used for many legal purposes when central visual acuity is_____.
   - a. one-half normal vision
   - b. one-fifth normal vision without corrective lenses and one-half with corrective lenses
   - c. 10/100 in the better eye with a corrective lens
   - [✓ d.] 20/200 or less in the better eye even when corrective lenses are worn

8. The refractive media of the eyes are the ________.
   1. lens
   2. retina
   3. vitreous body
   4. ciliary body
   5. aqueous humor

   a. 1,2,4
   [✓ b.] 1,3,5
   c. 2,3,4
   d. 2,3,5

9. Symptoms of acute glaucoma include __________.
   1. severe pain in and around the eye
   2. blurred vision
   3. excess formation of tears
   4. fever
   [✓ a.] 1,2
   b. 1,3
   c. 2,3
   d. 2,4

10. In a detached retina ___________.
   a. all layers of the retina pull away from the choroid
   [✓ b.] the sensory layer becomes separated from the pigmented layer
   c. the retina and choroid become detached from the muscle coat of the eye

11. Symptoms of detached retina include __________.
   1. feeling that a curtain is being drawn over the field of vision
   2. spots or moving particles before the eyes
   3. gaps in the vision
   4. flashes of light

   a. 1,2
   b. 1,3
   c. 2,3
   [✓ d.] all of these

12. After surgery on the eye, there may be an order for an enema or gentle laxative because ___________.
   a. the patient has not been out of bed to the bathroom for several days.
   b. drugs used prior to eye surgery often cause constipation.
   [✓ c.] straining at stool must be avoided.
   d. the soft diet necessary after surgery leads to constipation.

13. Conduction deafness is caused by any disease or injury ________.
   a. to the auditory nerve
   [✓ b.] that interferes with the conduction of sound waves to the inner ear
   c. to the external ear and eardrum
   d. to the cochlea

14. Select the correct progression describing the transmission of sound from the outer to the inner ear ______________.
    [✓ a.] tympanic membrane-malleus-incus-stapes-oval window
    b. tympanic membrane-incus-malleus-stapes-oval window
    c. tympanic membrane-incus-stapes-malleus-oval sindow

15. The middle ear connects with the nasopharynx by way of the __________.
    a. tympanic membrane
    b. external auditory canal
    [✓ c.] eustachian tube
    d. auditory tube

16. In serous otitis media__________.
    a. infection occurs in the outer auditory canal and middle ear
    b. the inner ear becomes filled with fluid
    c. the bones of the middle ear fuse
    [✓ d.] fluid forms in the middle ear

17. The Valsalva maneuver is a way of ___________.
    a. releasing the pressure in the middle ear by creating a minute hold in the tympanic membrane
    [✓ b.] equalizing pressure on both sides of the eardrum
    c. freeing the fused bones of the middle ear
    d. increasing pressure in the middle ear

18. The treatment of serous otitis media is surgical, by means of a ___________.
    a. stapedectomy
    [✓ b.] myringotomy
    c. tympanectomy
    d. myringoplasty

19. If facial paralysis occurs 12 to 24 hours after surgery on the ear, it is probably caused by __________.
    a. injury to the nerve
    [✓ b.] edema at the site of surgery
    c. the external dressing being too loose
    d. the dressing in the ear canal being saturated with drainage

20. Meniere's disease is characterized by__________.
    1. facial paralysis
    2. tinnitus
    3. purulent drainage from the ear canal
    4. severe vertigo
    5. progressive hearing loss

    a. 1,2,4
    b. 1,3,5
    c. 2,3,4
    [✓ d.] 2,4,5

Mrs. Collins, age 71, is admitted for cataract surgery. Both eyes are affected; however, the surgeon is going to operate on her right eye first and on her left eye in a few months. (Questions 21 to 24 refer to Mrs. Collins).

21. A cataract is a condition in which the __________.
    - [✓ a.] lens of the eye becomes opaque thus reducing the amount of light reaching the retina
    - b. ciliary muscles no longer expand and contract thereby reducing the amount of light transmitted through the lens
    - c. retina degenerates, resulting in an increased loss of vision
    - d. vitreous humor and lens are unable to transmit light because of the development of scar tissue

22. Cataract surgery involves _________.
    - [✓ a.] removal of the lens
    - b. removal of the lens and ciliary body
    - c. cutting a window into the lens and iris
    - d. removal of the vitreous humor

23. Two major complications of cataract surgery are _______.
    - a. hypotension and loss of the contents of the lens capsule
    - b. loss of vision and increased intraocular pressure
    - [✓ c.] loss of vitreous humor and hemorrhage
    - d. paralysis of the iris and hypertension

24. To prevent hemorrhage during the postoperative period, special care is taken to __________.
    - a. keep the operative eye covered to prevent tearing of the sutures
    - b. keep proper pressure applied to the eyeball by reinforcing the dressing as it becomes loose
    - c. keeping the patient on his unoperative side
    - [✓ d.] prevent straining and any suddent movement of the head

Mr. Wilson was diagnosed as having glaucoma at the time of his last eye examination. Eyedrops were prescribed for him and he was advised to have his eyes re-examined every 6 months. (Questions 25 & 26 refer to Mr. Wilson.

25. Glaucoma is a(n) ________.
    - a. disease of the eye resulting from an infection in the anterior chamber
    - b. disorder involving the vitreous humor and retina
    - c. absence of acqueous humor in the anterior chamber
    - [✓ d.] condition resulting from increased intraocular pressure

26. Mr. Wilson is diagnosed as having chronic glaucoma. In this case, the symptoms of glaucoma _____________.
    - a. will include pain which is usually severe
    - [✓ b.] may be absent
    - c. do not appear until the glaucoma becomes acute
    - d. cannot be controlled with medication

Mrs. Hunt, 32 years of age and the mother of 3 children, has had a progressive hearing loss for 2 years. After a thorough evaluation of her hearing loss she is diagnosed as having otosclerosis. Surgery has been recommended and she is admitted for a stapedectomy. (Questions 27 to 30 refer to Mrs. Hunt).

27. Otosclerosis results from ________.
    [✓ a.] bony ankylosis of the stapes
    b. fixation of the stapes on the round window
    c. fixation of the malleus on the tympanic membrane
    d. bony deposits on the malleus and incus

28. Following surgery, Mrs. Hunt complains of nausea and dizziness. These complaints are ____________.
    a. an indication that pressure in the ear is increasing and the patient will need to return to surgery
    [✓ b.] not unusual and do occur after ear surgery
    c. an indication that the surgery is a failure

29. The surgeon orders Mrs. Hunt out of bed with assistance. The packing has been removed from the outer ear and a small cotton plug inserted. Mrs. Hunt states that she still cannot hear any better than before surgery. As a nurse you know that __________.
    a. this means the surgery will not help her hearing
    [✓ b.] hearing improvement may take more time
    c. Mrs. Hunt can hear better, but is so used to a hearing loss it will take time for her to adjust to her improvement
    d. additional surgery will probably be necessary

30. The surgeon cautions Mrs. Hunt against blowing her nose suddenly or violently because this action could _________.
    a. rupture the tympanic membrane/malleus junction
    b. decrease pressure in the middle ear and thus interfere with the healing process
    c. increase drainage from the outer canal
    [✓ d.] dislodge the prosthesis

Fractures

31. After a fracture, the muscles surrounding the bone go into spasm causing ________.
    [✓ a.] increased deformity and interference with the vascular and lymphatic circulation
    b. a second fracture
    c. relief from the pain that occurred at the time of the fracture
    d. decreased deformity and increased interference with circulation

32. Nursing measures that promote adequate circulation in the fracture area encourage ___________.
    a. interference with the deposit of calcium in the bone
    b. loss of calcium from the bone, which is necessary in the healing of the fracture
    [✓ c.] healing of the bone

33. The administration of correct first aid after a fracture is extremely important. Control of bleeding from the wound of an open fracture is initially accomplished by __________.
   a. application of a tourniquet above and below the area of injury
   b. alignment of the extremity and application of pressure with the palm of the hand above the area of injury
   [✓ c.] direct pressure applied to the bleeding wound with a sterile dressing and a pressure bandage
   d. application of a dry sterile dressing

34. Skin traction __________.
   a. is a type of traction using wire, pins, ropes, and weights
   [✓ b.] utilizes pullon tapes or traction strips attached to the skin
   c. is only used for fractures of the arm
   d. utilizes braces and slings to provide pull in the opposite direction

35. Skeletal traction __________.
   [✓ a.] uses a wire pin inserted in the bone with pull applied to the pin or wire
   b. is only used on the lower extremity
   c. is only used for simple and greenstick fractures
   d. uses tapes or traction strips attached to ropes to provide pull in the opposite direction

36. A principle of traction, that is traction and countertraction, means __________.
   a. a force applied against another force
   [✓ b.] two forces pulling away from a center
   c. a pulling force alternating with a release of force
   d. the application and release of weights

37. A complication of prolonged bed rest and limited fluid intake is __________.
   a. edema
   [✓ b.] kidney stones
   c. poor circulation
   d. decubitus ulcers

38. The patient with a fracture of the spine is usually placed in a position of __________.
   a. abduction
   b. adduction
   [✓ c.] hyperextension
   d. hypoextension

39. In crutch walking, the weight is carried on the hands, not the axillae. The patient who carries weight on his axilla rather than his hands may __________.
   a. place an extra strain on the muscles of his arms
   b. not be able to use a swing-through crutch gait
   c. develop abrasions on his hands
   [✓ d.] injure the brachial plexus

Mr. Brown, age 61, is in Russell traction for a fracture of his right femur - a bone in the upper leg. The traction was applied 3 days ago and he has been cooperative in assisting the nurses with his care. He is able to use a trapeze bar suspended over his bed as an aid in moving. (Questions 40 to 42 refer to Mr. Brown).

40. When checking Mr. Brown's traction the nurse must check the weights which should ________.
    a. be supported on a chair
    b. only be lowered every 2 hours
    c. be taped to the pulley and anchored to the bed frame
    [✓ d.] hang free and not touch the bed

41. Mr. Brown asks if the head of his bed can be raised as high as possible because he wants to write letters. In this instance you would ________.
    a. raise the head of the bed to the position requested by Mr. Brown
    b. not raise the head of the bed as the bed is always kept flat
    [✓ c.] check the physician's orders to see how high the head of the bed can be elevated
    d. call Mr. Brown's physician and ask what should be done

42. Mr. Brown's physician has ordered range-of-motion (ROM) exercises to be taught by the physical therapist. After Mr. Brown has learned how to do these exercises, the nurse should check to be sure he is exercising. These exercises are ordered for the ________.
    [✓ a.] affected and unaffected extremities
    b. right leg only
    c. arms only as both legs must remain immobile
    c. left leg only

Mrs Willard, age 79, slipped on a small rug and fell, injuring her right hip. Her son found her several hours after the incident and called her physician who ordered an ambulance to transport her to the hospital. (Questions 43 to 45 refer to Mrs. Willard)

43. On arrival in the emergency room, Mrs. Willard was examined by a physician who determined that she probably had a fracture of her right hip. Signs of a hip fracture include ________.
    a. pain in the area and difficulty in walking
    b. weakness on the affected side and internal rotation of the leg
    [✓ c.] shortening of the leg and external rotation of the leg and foot
    d. muscle spasm and a lengthening of the affected leg

44. Mrs. Willard required surgery with internal fixation of the fracture. The postoperative orders include turning her every 2 hours. To turn Mrs. Willard correctly________.
    [✓ a.] place a pillow lengthwise between her legs, keep the affected leg straight and turn the entire body in one movement
    b. elevate the head of the bed, raise the side rails and use pillows to support the patient while turning
    c. keep the bed flat, flex the affected leg and turn the patient onto the unaffected side
    d. place pillows under both hips, a small pillow under the knee of the operated leg, and turn the patient on either side

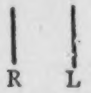
45. A complication of the internal fixation procedure is necrosis of the femur. If Mrs. Willard were to develop this complication, early recognition would be important. Early signs of necrosis of the femur are ________.
    1. pain
    2. paralysis
    3. swelling of the entire leg
    4. muscle spasm
    5. a limp while ambulating

    a. 1,2,3
    [✓ b.] 1,4,5
    c. 2,3,4
    d. 2,4,5

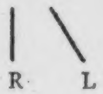
Mrs. Lane, age 48, has had severe arthritis of her left hip for 6 years. Due to severe arthritic degeneration, disabling pain, and severe limitation of movement in the hip joint, her physician has decided to perform a total hip replacement. (Questions 46 to 48 refer to Mrs. Lane).

46. Following surgery the physician orders Mrs. Lane's leg to be kept in an abducted position at all times. Which drawing illustrates an abducted position of the left (L) leg? b

a.



[✓ b.]



47. It is extremely important that the physician's order be followed. If the leg is not kept in the abducted position, the ________.
    a. femur may refracture
    b. patient may experience more than an average amount of postoperative pain
    [✓ c.] prosthetic femoral head may dislocate from the acetabulum
    d. leg may shorten

48. While each patient is different, patients who have a total hip replacement usually begin ambulation 1 week after surgery. Prior to ambulation, Mrs. Lane will begin exercising the affected limb. Since the exercises will be painful ________.
    a. Mrs. Lane should be told that after she has performed the exercises a narcotic will be given.
    [✓ b.] they are best done 1/2 to 1 hour after the administration of an analgesic
    c. the nurse should prepare the analgesic ordered by the physician and keep it at Mrs. Lane's bedside in case the pain becomes too severe

Arthritis

49. The onset of rheumatoid arthritis usually occurs over a period of time. Early signs of this disease include ________.
    1. immobility of a joint
    2. swelling and pain in the joints that come and go
    3. morning stiffness
    4. hypertension
    5. joint soreness

    a. 1,2,3
    b. 1,3,5
    c. 2,4,5
    [✓ d.] 2,3,5

50. Treatment of rheumatoid arthritis is aimed at ________.
    1. preventing or correcting deformities
    2. curing the disease as quickly as possible
    3. making the patient more comfortable
    4. destroying the organism causing the disease

    a. 1,2
    [✓ b.] 1,3
    c. 2,3
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51. Braces, bivalve casts, or splints may be applied to joints that are painful or in spasm to help prevent ________.
    a. inflammation and swelling
    [✓ b.] dislocations and deformities
    c. pain and fractures around the joint
    d. contractures and joint sprains

Mrs. Todd, a 59-year-old housewife, has had a right hip arthroplasty for an arthritic deformity. Prior to surgery, she had limited motion of the joint, along with moderate to severe discomfort when walking. Following surgery, she was placed in a balanced suspension traction. It is now her second postoperative day. Questions 52 to 55 refer to Mrs. Todd.

52. The surgeon orders a trochanter roll for Mrs. Todd's unoperated leg to prevent __________.
    a. internal rotation
    [✓ b.] external rotation
    c. hyperextension of her left knee
    c. footdrop

53. If a pillow is placed between Mrs. Todd's knees, it will prevent __________.
    [✓ a.] accidental adduction
    b. accidental abduction
    c. external rotation of the leg
    d. hyperextension of the knee and ankle

54. A nursing assistant tells you that Mrs. Todd has asked to have the head of the bed raised. Your decision is to tell the nursing assistant __________.
    a. to raise the head of the bed
    b. to tell Mrs. Todd that you will call her physician later for an order to raise the head of her bed
    [✓ c.] that you will explain to Mrs. Todd that, because of her surgery, the head of the bed will need to remain flat until her physician permits it to be raised

55. One of the other nurses states that she is not familiar with the nursing management of a patient with a hip arthroplasty and asks how long Mrs. Todd will remain in traction. Your answer is _________.
    a. 24 to 72 hours
    b. approximately 4 to 6 weeks
    c. usually 7 days
    [✓ d.] approximately 3 weeks

Sandy, age 26, developed rheumatoid arthritis at 18. At present she has extensive damage to most of her joints, but particularly to her hands, wrists, hips and knees. Questions 56 to 58 refer to Sandy.

56. Sandy asks if she could take a buffered aspirin product as the plain aspirin has been causing nausea. Your response will be based on the knowledge that _______.
    a. only the physician can answer any question concerning her drugs
    b. aspirins are all alike and one can be substituted for another
    [✓ c.] buffered aspirin contains an alkali and in high doses could cause an electrolyte imbalance

57. Sandy tells you that she is getting tired of taking drugs, is feeling better, and, therefore, is going to stop taking all medications. Your response is based on the knowledge that ________.
   a. relief of symptoms is a sign that the disease is improving and drug therapy should be discontinued
   [✓ b.] consistent medical supervision and drug therapy is important even though the patient may feel good and have relief from pain and stiffness
   c. other drugs will probably be necessary but the aspirin should be continued until the physician has time to order other drugs

58. Sandy tells you that she has decided to take long, slow walks to keep her muscles and joints free from stiffness. Your response to this statement is based on the knowledge that __________.
   [✓ a.] rest and exercise are important, but the physician's advice must be followed since too much or too little of each can be harmful
   b. exercise is necessary for all patients with rheumatoid arthritis, but all exercise must be done slowly
   c. walking is considered one of the best forms of exercise and will reduce the possibility of joint stiffness and deformity

Mrs. Carroll, age 63, has osteoarthritis--a degenerative joint disease. Although admitted to the hospital for other reasons, her arthritis has begun to cause discomfort. Questions 59 to 62 refer to Mrs. Carroll.

59. Mrs. Carroll's osteoarthritis is _________.
   a. rarely seen under the age of 65
   b. more common in women
   c. requently due to an earlier infectious process
   [✓ d.] a reflection of the generalized aging process

60. Mrs. Carroll asks if her arthritis can either be cured or at least stopped from getting worse. Although this is a question a physician will answer, the nurse should know that osteoarthritis is _______.
   a. curable only if diagnosed early
   b. best treated with hot baths to prevent joint degeneration
   c. easily controlled with medications
   [✓ d.] a progressive disease

61. Mrs. Carroll complains of stiffness and soreness, especially in the morning hours. To help Mrs. Carroll, the nurse should plan to ________.
   a. help her with exercises to loosen up her joints when she first gets out of bed
   [✓ b.] allow her to complete her morning care at her own rate
   c. encourage her to do all her own care as this will prevent stiffness the next day
   d. tell her to stay in bed until the afternoon hours

62. Mrs. Carroll brought bedroom slippers to the hospital but did not bring shoes. To promote better foot and leg support the nurse should _________.
   [✓ a.] suggest that Mrs. Carroll's family bring her shoes to the hospital
   b. tell Mrs. Carroll that she should not go barefoot and wear her slippers when out of bed
   c. suggest that her family purchase orthopedic arch supports for her slippers
   d. tell Mrs. Carroll to walk slowly and plant each foot firmly on the ground

Mr. Lewis, 56, years of age, has had gout for many years. Because he fails to adhere to the medication and dietary regimen prescribed by his physician, he occasionally has acute attacks of gout. (Questions 63 to 67 refer to Mr. Lewis.)

63. Purines are the end-products in the digestion of __________.
a. fats
b. carbohydrates
[✓ c.] certain types of proteins

64. The physician may diagnose Mr. Lewis' gout by __________.
1. blood tests, particularly serum uric acid levels
2. biopsy of the tissue around the joint(s)
3. physical examination of the affected joint(s)
4. x-ray examination of the affected joint(s)
5. stool samples
a, 1,2,5
[✓ b.] 1,3,4
c. 2,3,4
d. 2,4,5

65. Mr. Lewis has an acute attack of gout and his physician prescribes colchicine to be given hourly until ___________.
a. his joints are less stiff and he can move without pain.
b. his temperature returns to normal.
c. pain, redness, and joint enlargement have disappeared.
[✓ d.] pain subsides or nausea, vomiting, diarrhea, or intestinal cramping occur

66. Although Mr. Lewis has not adhered to treatment in the past, he now states that the pain during this last attack was so severe he intends to follow his physician's orders. Future treatment will be aimed at ___________.
a. raising Mr. Lewis' serum uric acid level
b. making Mr. Lewis adhere to a medication schedule
[✓ c.] preventing future attacks and permanent joint damage
d. curing the disease through intensive drug therapy

67. Mr. Lewis will be taking allopurinol (Zyloprim) once the acute phase of his attack has subsided. When this, as well as other drugs for gout, is taken, it is recommended that the patient increase his fluid intake to ___________.
a. dissolve any stones that may form in the urinary tract
[✓ b.] reduce the possibility of urate stone formation in the kidney
c. wash out any stones that may form

Competencies:

Unit VIII: Malignant Neoplasms and Sexual Identity

A. Caring For The Client With Neoplasia:
   The student will:
   1. Identify risk factors in heredity, environment and the individual that may predispose to carcinoma.
   2. List diagnostic measures used to confirm presence and extent of carcinoma.
   3. Relate four therapeutic measures used to control carcinoma and the significant side effects.
   4. Identify appropriate nursing interventions for complications associated with chemotherapy.

B. Identify the significance of the loss of reproductive organs to the change in body image
   1. Incorporate age group tasks to patients adjustment.

C. List the signs and symptoms related to enlargment of the prostate gland
   1. Identify the 4 types of surgery and their implications for patient teaching.
   2. Plan the postoperative care for a patient have a prostate-ectomy

D. Identify the methods of diagnosing testicular cancer
   1. Relate the major psycho-social adjustments of the young adult male with testicular cancer.

E. Identify the causes of pelvic inflammatory disease and the nursing interventions that are needed.

F. State 3 possible causes of endometriosis and the complications that can occur
   1. Identify signs and symptoms.
   2. Describe the choices of treatment for the patient.

G. Relate the symptoms of cancer of the cervix
   1. List the types of surgery required for various stages of tumor growth.
   2. Identify nursing interventions in post-op care.

H. In caring for a patient that requires a hysterectomy the student will be able to
   1. Identify the significance of the various types of surgery to the teaching needs for the patient.
   2. Plan the postoperative care of a patient with abdominal hysterectomy.
   3. Relate the physiological implications between estrogen replacement therapy versus surgical menopause.

Unit VIII: (cont'd)

I. In caring for a patient with cancer:
  1. Identify risk factors.
  2. List signs and symptoms.
  3. Explain at least 4 methods of identifying the presence of a breast tumor.
  4. Compare the 4 types of surgical intervention used.
    a. Relate the post-operative care needed for each surgery.
    b. Relate the teaching needs for each type of surgery before discharge.
  5. State the side effects of radiation to the breast and what nursing actions are required.
  6. Identify at least 6 major psycho-social implications of a woman having a mastectomy.

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Student Competency Sheet

Unit VIII: Malignant Neoplasms and Sexual Identity
Module A: Prostatectomy

Competency: Identifies specific assessments and needs of a patient having prostatectomy.

Performance Objective: The student will:

1. analyze measures of assessment and diagnosis of urinary retention.
2. identify interventions for a patient recovering from prostatectomy.
3. analyze the effects of prostatectomy on the sexuality of a patient.
4. compare types of surgery for health outcomes on the patient.

Suggested Learning Activities:

_______ 1. Read: Shafer's p. 664-7.

_______ 2. Gault, "The Prostate", NSG '77 April, p. 34-8.

_______ 3. Complete study guide and submit 4 drug cards.

_______ 4. Be able to explain the following terms: nocturia, penoscrotal angle, urinary retention, urinary urgency.

Evaluation: Completes study guide and submits 4 drug cards with appropriate data.

Extended Learning Activities:

_______ 1. Provide nursing care to a male patient with prostatectomy or a urinary retention problem.

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Student Competency
Study Guide

Unit VIII: Malignant Neoplasms and Sexual Identity
Module A: Prostatectomy

Directions: Complete the questions, and chart on surgeries; submit 4 drug cards.

Case Study:

George Martinis is a 56 year old man who has experienced hesitation and difficulty in initiating urinary flow for 6 months. He has noticed a progressively smaller caliber stream of urine and nocturia 1-2 times. He suddenly experienced lower abdominal discomfort that radiated to his lower lumbar and sacral region after drinking 2 cans of beer. He contacted his doctor, when chills, nausea, headache, and urgency with inability to void started to bother him.

1. What are the initial signs and symptoms of prostate disorders? How does the aging process affect urination in males?

2. What is the etiology of prostate enlargement?

3. What is the role of the prostate in sexual functioning?

4. What are the potential complications of urinary retention in a male?

In the ER George was diagnosed with acute urinary retention with an enlarged tender protate gland. A Foley Catheter was inserted for bladder decompression at 100 cc q 1h. The catheter was taped to lateral thigh to eliminate pressure at penoscrotal angle. A cloudy, foul-odored bloody urine specimen was sent for analysis and culture and sensitivity. Results were:

Sp. Gr. 1.030
Albumin - Neg.
Sugar - Neg.
Acetone - Neg.
Reaction - alkaline
Occult blood - 1g.
WBC: 5-7
Bacteria - many
C/S - + proteus Vulgaris

Orders were:

Bed rest
Force fluids 3000 ml qd
I&O
For cystoscopy and needle biopsy
IVP
Pyridium 220 mg TID
Mandelamine 1 g. qid
Ampicillin 250 mg q4h

5. Why was the urine cloudy and foul odored?

6. What are the reasons for hourly decompression of the bladder? What complications might occur if suddenly emptyed?

7. How does the nurse collect a urine specimen for C/S from a Foley?

8. Identify potential short and long term complications from urinary drainage by Foley catheter. How are these prevented?

George had a cystoscopy which showed benign adenoma, the IVP indicated normal function of kidneys and ureters, and a TURP was planned with low spinal anesthesia and electrocoagulation for hemostasis. George returned from surgery with a 3-way Foley (30 cc bag) with continuous NS irrigation. The following orders were written:

Neosporin G-U irrigation 1000 ml.
Bleeding precaution
Force fluids 3000 ml qd
OOB in a.m. with Teds

9. What is the reason for an IVP?

10. Why are PO fluids encouraged with a continuous bladder irrigation providing fluids to the bladder?

11. What would normally be seen in the urinary drainage? Why is a Foley with 30 cc bag inflation used?

12. Provide the following data for the 4 types of prostate surgery:

Name of Surgery & Explanation	Advantages	Disadvantages	Post-op Nursing Implications

The second postop day the urine was pink in color without clost and the irrigation was discontinued to a straight drainage system. Urecholine 10 mg. q.i.d. was ordered. After the Foley was removed George experienced dribbling incontinence which worried him. He learned the incontinence would improve eventually. He was conferenced on the need to exercise perineal muscles and that surgery should not cause a reduction in sexual ability. Before discharge on the 7th day he was given the following orders:

-- no strenous lifting, riding in a car, climbing stairs, intercourse, straining at stool
-- 3 qts. fluid qd. No ETOH, coffee or tea.
-- Pericolance and Urecholine drugs
-- Dribbling and small blood in urine for 5 weeks
-- Empty bladder q4h (and at night).

13. What signs/symptoms of urinary dysfunction may occur after a Foley is removed?

14. Complete a drug card for: Pyridium Mandelamine, Urecholine, pericolace.

15. What is the desired action of Urecholine for George?
    What teaching is needed for him and his wife?

16. Why does dribbling incontinence occur?

17. Why are perineal exercises important?

18. Discuss the sexuality of a male 56 years old.

19. What kinds of adjustment problems may develop?

Teachers Guide

Unit VIII: Malignant Neoplasms and Sexual Identity
Module A: Prostatectomy

Teaching Activities:

1. Article by Gault excellent, with pictures for students to visualize prostate location.

Bibliography:

1. Wardell, Acute Intervention: "Prostatectomy", 1979, p. 307.

Unit VIII: Malignant Neoplasms and Sexual Identity
Module B: Hysterectomy

Competency: Identify the effects on the sexuality of a patient having a hysterectomy.

Performance Objective: The student will design health outcomes for the prevention of physiological and psychological complications of a patient experiencing a hysterectomy with bilateral ooperectomy for cancer of the uterus.

Suggested Learning Activities:

_______ 1. Read: Shafer's p. 712-714, 694-7, 682-3, 687-91.

_______ 2. Develop a care plan for a 48 year old wife and mother of 2 children having a hysterectomy and ooperectomy for a cancerous tumor. Identify psychological needs for problem areas. (3)

_______ 3. List major side effects to chemotherapy.

Evaluation: Appropriate psychological problems are developed in a care plan. (at least 3). Lists at least 4 major side effects of chemotherapy.

Extended Learning Activities:

_______ 1. Read: Tyson, "Lets Talk About Menopause", NSG 78, August p. 34.

Butts, "Meeting Needs of Hysterectomy Patient", NSG 79, November, p. 40.

Vernon, "Explaining Hysterectomy", NSG 73, Sept.

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Student Competency

Nursing Care Plan
Unit VIII:Module B : Hysterectomy

Patient Problem	Goals	Nursing Interventions	Rational

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Teachers Guide

Unit VIII: Malignant Neoplasms and Sexual Identity
Module B: Hysterectomy

Teaching Activities: Discuss pro/con of estrogen replacement therapy. Discuss implications of body image changes and fears of cancer and chemotherapy.

Bibliography:

Wardell, Acute Intervention: "Hysterectomy", p. 164, 1979.

Nursing Skillbook: "Helping Cancer Patients Effectively".

Evaluation: Care plan identifies problems related to sexuality, body image, and/or fears related to cancer. (i.e. menopause, scars, intercourse, weight gain, depression, reoccurence, malignancy, loss of productivity, femininity, etc.).

Identifies at least 4 major side effects to chemotherapy.

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Student Competency Sheet

Unit VIII: Malignant Neoplasms and Sexual Identity
Module C: Alteration in Body Image and Mastectomy

Competency: To relate the importance of teaching and emotional support to a patient with cancer of the breast.

Performance Objective: The student will:

a. Identify and define diagnostic tests for cancer of the breast.
b. Describe pre and post operative nursing management for mastectomy.
c. Promote patient's adjustment to an altered body image.
d. Facilitate the sexual adjustment of the patient post mastectomy.

Suggested Learning Activities:

_______ 1. Read Shafer's pp. 106-110; 730-744.

_______ 2. Define: mammography
thermography
xerography
oophorectomy
lymphedema

_______ 3. Complete study guide on mastectomy care.

Evaluation: Completion of study guide with 75% of content accuracy; definition of terms.

Extended Learning Activities:

_______ 1. Read: Winkler: "Choosing the Prosthesis and Clothing" AJN, Sept. 1977, -. 1433-6.

Thomas: "Breast Reconstruction After Mastectomy" AJN, Sept. 1977, p. 1438-42.

Watts, "Dimensions of Sexual Health", AJN, Sept. 1979, p. 1568.

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Student Competency
Study Guide

Unit VIII: Malignant Neoplasms and Sexual Identity
Module C: Mastectomy and Body Image

Directions: Complete answers to study guide using textbook as a resource.

Case Study:

Barbara Livingston is a 48 year old wife and mother of 3 grown children who discovers a breast lump while doing a breast self-examination. After a Xerography shows positive results, a biopsy reveals carcinoma and a left radical mastectomy is performed. A stage III, T_3, N, M_o, classification was given. Postoperative orders were:

Demerol 75 mg. IM for pain
Elevate left arm in sling
Empty Hemovac q8h
Flexion-extension of left hand/wrist/elbow
OOB as tolerated
Referral for Reach to Recovery for day 5 visit

Questions:

1. Describe significance of stage III, T_3, N_1 M_o data. How does metastasis of breast cancer occur?
2. Define radical mastectomy. What is the rationale in contrast to a simple mastectomy?
3. What understanding of the female body image should the nurse have when emotionally supporting the patient?
4. If you noted drainage on the dressing, how would you observe the spot over time? What other observations would you make?
5. What is the principle of a hemovac drain?

Fill in the following chart:

	Therapeutic Effects	Undesirable Effects	Nursing Objectives	Method of Evaluating Effectiveness
Mastectomy Dressing				

	Therapeutic Effects	Undesirable Effects	Nursing Objectives	Methods of Evaluating Effectiveness
Hem[illegible]ac Drain				

6. Why is the left arm elevated?

7. What are the purposes of exercising the arms? How can exercises be incorporated into ADL?

8. What precautions are necessary to lessen chances of lymphedema?

9. What are some of the fears women may have regarding their sexuality after a mastectomy? How can a nurse assist the patient to lessen her anxieties related to sex? What other persons might be helpful?

10. What materials can the nurse suggest for use as a temporary breast prosthesis? When can she obtain a permanent prosthesis?

11. How does the patient's rehabilitation program differ according to the type of surgical procedure? (Fill in the chart for 4 types of surgery).

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Type of Surgery	Outline of Rehab Program

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Teachers Guide

Unit VIII: Malignant Neoplasms & Sexual Identity
Module C: Mastectomy and Body Image

Teaching Activities:

Invite a Reach to Recovery volunteer to speak to class.

Bibliography:

Wardell, Acute Intervention: "Radical Mastectomy" p. 264, 1979.

Tully, "Breast Cancer", NSG '78, Jan. p. 18.

HEW: Breast Cancer Digest, March 1979.

Roznoy, "Taking A Sexual History", AJN, August 1976, p. 1279.

Evaluation of Study Guide:

1. Stage III = up to 10 cm tumor (T_3)
   N = movable/fixed lymph node involvement
   M_o= no metastasis
   Metastasis = blood stream, lymphatic drainage, local spread
2. Breast, nodes, and muscles. Removes muscle to remove metastatic lymph nodes.
3. Society's emphases on breasts; sexual conotations; look and fit clothes; occupation and age of patient; marital status; support systems.
4. Circle the spot; check under patient for drainage; vital signs.
5. Removes blood and fluids to decrease chance of infection.
6. Facillitates drainage of blood and lymph nodes.
7. Prevents lymphedema; washing face, combing hair.
8. Avoid cuts, burns, constriction of arm vessels; exercise arm.
9. Fear of rejection from husband, loss of feminimity and sexual attractiveness. Verbalization of fears, give support and suggestions to maintain attractiveness. A previous mastectomy patient, sex counselor.
10. Soft material - cotton, tissue, gauze. After 6 weeks.

11. Type of Surgery	Rehab
1) Partial	Care of incision. Self-exam of other breast.
2) Simple	Periodical check ups. Psychological support.
	above plus:
3) Modified Radical	Prevent lymphedema. Possible mammoplasty. Possible chemotherapy, radiation.
4) Radical	Exercise for ROM. Prevent lymphedema.

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Unit VIII: Malignant Neoplasms and Sexual Identity

Competency Exam

Directions: Select the best answer and place answer on the answer sheet provided.

Cancer Treatment

1. An early symptom of testicular cancer would be:
   A. abdominal mass.
   B. enlarged lymph nodes in groin.
   C. scrotal enlargment.
   D. pain on urination.

2. In testicular cancer, the serum level of Human Chorionic Gonatropin (HCG) indicates all of the following except:
   A. determines the presence of a tumor.
   B. shows the effectiveness of treatment.
   C. indicates a need for change of treatment.
   D. determines the extent of metastasis.

3. Common side effects to drugs used in chemotherapy can cause:
   1. mucosa bleeding.
   2. bone marrow depression.
   3. muscle atrophy.
   4. peripheral nerve damage.

   A. 1,2
   B. 1,4
   C. 2,3
   D. 2,4

4. A decrease in the production of blood cells by the bone marrow can result in:
   1. anemia.
   2. leukopenia.
   3. thrombocytopenia.
   4. polycythemia.

   A. 1,2,4
   B. 1.2,3
   C. 4 only
   D. all of above

5. Radiation is used in the treatment of cancer on the principle that it:
   A. affects cancer cells leaving normal cells unharmed.
   B. penetrates the body to dissove cancer cells and tumor masses.
   C. decreases size of tumor and metastatic spread.
   D. is a palliative therapy for extensive metastasis.

6. A patient receiving chemotherapy is subject to various side effects. All of the following are pertinent assessments for complications except:
   A. check urinary samples for hematuria.
   B. report an increase in WBC as indication of drug toxicity.
   C. provide mouth rinses for the discomfort of stomatitis.
   D. Check CBC reports for drop in RBC.

7. Mrs. Smith has had radiation treatments to her chest for lung cancer. She is being discharged and complains to the nurse that the radiated area is red and weeping. The nurse explains that this is:
   A. normal and she should wash with soap and water and apply an ointment to prevent infection.
   B. abnormal and should contact her physician for an appointment.
   C. normal and she should keep it dry and avoid any heat to the area.
   D. abnormal and requires a pressure dressing with zinc oxide.

Prostatectomy

Mr. H., 80 years old, is admitted with an enlarged prostate gland. He has been unable to void for 12 hours.

8. A foley is inserted to empty the bladder gradually. The best rationale to empty an overextended bladder by degrees is to prevent:
   A. renal collapse and failure.
   B. abdominal cramping.
   C. hypotension and possible shock.
   D. weakening and atrophy of bladder wall.

9. The foley catheter is taped to Mr. H's. thigh in order to:
   A. eliminate pressure at the penoscrotal angle.
   B. prevent the catheter from kinking.
   C. prevent the catheter from being pulled out.
   D. allow the patient to turn more easily.

10. Mr. H., has a transurethral resection (TUR) with a bilateral vasectomy. He has a 3 way foley with irrigation of the bladder. In which instance should the nurse increase the rate of irrigating solution?
    A. the return is continuous but slow.
    B. the return appears cloudy and dark yellow.
    C. the drainage has become bright red.
    D. there is no return of urine or solution.

11. Mr. H. complains of needing to void. The most appropriate thinking by the nurse is:
    A. the catheter may be plugged and needs irrigation.
    B. this is a common feeling after this type of surgery. The urge to void void is being imagined.
    C. the urge to void is usually created by the catheter and bladder spasms.
    D. there may be some confusion post-op due to age and type of surgery.

12. After removal of the foley, which of the following symptoms can be expected temporarily?
    A. Painful voiding.
    B. Urinary retention.
    C. Dribbling incontinence.
    D. Frequency of urination.

13. The reason Mr. H. had a vasectomy along with a TUR was to:
    A. reduce the risk of epididymitis.
    B. eliminate hormone stimulus to the prostate.
    C. decrease the risk of urethritis.
    D. prevent recurrence of prostatic enlargement.

14. Of the 4 surgical removal approaches, which one most frequently requires additional surgery for tissue removal later on?
    A. Perineal.
    B. Retropubic.
    C. Suprapubic.
    D. Transurethral.

Hysterectomy

15. Mrs. M., age 25, has been diagnosed with endometriosis. Which of the following statements pertain to this disruption?
    1. It is common in women who have never been pregnant.
    2. It is often correlated with multiparity.
    3. Following menopause the aberrant tissue atrophies.
    4. Early pregnancy is discouraged due to clotting tendencies.
    5. Misplaced endometrium respons to hormonal stimulation.

    A. 1,2,4
    B. 1,3,5
    C. 2,3,4
    D. 3,4,5

16. A client undergoing a partial oophorectomy and bilateral salpingectomy will experience the following physical disruption specifically related to the surgery:
    A. menses continue, with sterility.
    B. menses continue, without sterility.
    C. menses cease with surgical menopause.
    D. menses cease without surgical menopause.

17. Nursing care for a client 24 hours post anterior pelvic exenteration would include:
    1. Betadine douche qd.
    2. emptying ileal loop drainage q2^{o}.
    3. colostomy care q8^{o}.
    4. coughing and deep breathing q2^{o}.
    5. removing support stocking 1^{o} q shift.

    A. 1,4
    B. 3,4
    C. 2,4,5
    D. all of above

18. Mrs. G., 45, is scheduled for a total abdominal hysterectomy for a uterine fibroid tumor. The most frequent occurring symptom of a uterine tumor is:
    A. acute abdominal pain.
    B. abdominal distention.
    C. metrorrhagia.
    D. stress incontinence.

19. Following her hysterectomy Mrs. G. may experience all of the following except:
    A. abdominal distention.
    B. sudden episodes of flushing and perspiration.
    C. thrombophlebitis of the leg.
    D. difficulty in voiding.

20. The vaginal drainage on perineal pads for the first few days after hysterectomy normally is a:
    A. minimal serous drainage.
    B. moderate mucoid drainage.
    C. large bloody drainage.
    D. moderate serosanquineous.

21. Of the following types of hysterectomies, which would be the most appropriate for hormone replacement?
    A. Sub total hysterectomy.
    B. Total vaginal hysterectomy.
    C. Pan-hysterectomy.
    D. Radical hysterectomy with node disection.

22. The primary purpose of a Papanicolaou test is to determine:
    A. cancer of the cervix.
    B. fibroids of the uterus.
    C. pelvic inflammatory disease.
    D. endometriosis.

23. Mrs. M., 55, has a pan-hysterectomy following years of metrorrhagia and dysmenorrhea. She has been taking prednisone daily for 2 years. Which complication could occur post-op if this drug is not tapered off gradually?
    A. Paralytic Ileus.
    B. Adrenal crisis.
    C. Pulmonary emboli.
    D. Thrombophlebitis.

Breast Cancer

24. Of the following behaviors, all are characteristic of late breast malignancy except:
    A. dimpling.
    B. non-movable.
    C. discharge.
    D. nipple retraction.
    E. non-tender.

25. Risk factors associated with breast cancer include all of the following except:
    A. late menarche.
    B. unmarried; childless.
    C. mother and aunt with breast cancer.
    D. Cystic disease of the breast.
    E. late menopause onset.

26. Mrs. K., is a 38 year old woman who comes to the hospital for evaluation of a breast tumor. She is scheduled for mammography tomorrow. Mrs. K. should know that mammography:
   A. cannot distinguish malignancy of a tumor.
   B. requires cooling of body temperature.
   C. involves injection of dye into the breast tissue.
   D. is an accurate, simple diagnostic x-ray.

27. Radical mastectomy is the surgical removal of the:
   A. entire breast.
   B. breast and axillary lymph nodes.
   C. breast, muscle, and axillary lymph nodes.
   D. tumor only.

28. Mrs. R., 45 year old, is sent to the operating room where a frozen reveals carcinoma. A left modified radical mastectomy is performed. Your nursing care for the first 24 hours would include all of the following except:
   A. position the left arm on pillows for support and drainage.
   B. observe hemovac for patent suctioning to avoid tension on the suture line.
   C. check upper outer quadrant of dressing for bright red blood.
   D. observe left hand for pallor, coolness, swelling and tingling.

29. You, the nurse observe that at 8 p.m. there has been no drainage in the hemovac on your shift. You would:
   A. call the doctor to come irrigate the tubing.
   B. turn her on the affected side for better drainage.
   C. irrigate with 30 cc of normal saline.
   D. milk the tubing for return.

30. In helping Mrs. R. through the rehabilitation stage of a modified radical mastectomy, the nurse would do which one of the following?
   A. Explain the importance of using a straight razor when shaving axillary hair.
   B. Reassure her that her crying spells are normal and that in time they will pass away.
   C. Report her complaint of numbness in the inner aspect of her left arm since this is uncommon.
   D. Encourage ambulation with her right arm in a sling and her posture erect.

31. Mrs. K., 6th day post-op for a left simple mastectomy, is being prepared for discharge. A priority in her teaching should be to:
   A. emphasize protection of left hand against cuts and burns in the kitchen.
   B. stress importance of following through on bilateral arm exercises.
   C. point out that lymphedema can still occur during the first year.
   D. instruct her on care of incision.

32. Which of the following statements is true?
   A. The permanent prosthesis can be worn after the final dressing change.
   B. Cotton can pad the bra when clients get dressed for discharge.
   C. The permanent prosthesis can be fitted before leaving the hospital.
   D. The temporary prosthesis should not be worn until healing is completed.

33. The mastectomy patient should know that during her recovery period at home she:
    A. may experience pain and enlargement in the remaining breast.
    B. can obtain a permanent prosthesis at 4 weeks.
    C. should exercise the operative side for at least 2 months.
    D. is vulnerable to lymphedema until complete R.O.M. returns and should avoid injury to her arm.

34. In radical mastectomy, the appropriate positioning of the arm on the operative side is:
    A. across the chest wall.
    B. at her side level with her body.
    C. on pillows-hand lower than elbow and elbow lower than shoulder.
    D. on pillows-hand higher than elbow and elbow higher than shoulder.

35. A drainage tube is left in the operative area attached to a suction device in order to:
    A. increase collateral lymph flow to the area.
    B. remove accumulations of serum and blood from the area.
    C. prevent formation of adhesions between skin and chest wall.
    D. decrease introthoracic pressure and facilitate breathing.

Wor-Wic Tech Community College Nursing Programs

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Unit VIII: Malignant Neoplasms and Sexual Identity

Competency Exam

Directions: Select the best answer and place answer on the answer sheet provided.

Cancer Treatment

1. An early symptom of testicular cancer would be:
   A. abdominal mass.
   B. enlarged lymph nodes in groin.
   [✓ C.] scrotal enlargment.
   D. pain on urination.

2. In testicular cancer, the serum level of Human Chorionic Gonatropin (HCG) indicates all of the following except:
   A. determines the presence of a tumor.
   B. shows the effectiveness of treatment.
   C. indicates a need for change of treatment.
   [✓ D.] determines the extent of metastasis.

3. Common side effects to drugs used in chemotherapy can cause:
   1. mucosa bleeding.
   2. bone marrow depression.
   3. muscle atrophy.
   4. peripheral nerve damage.

   [✓ A.] 1,2
   B. 1,4
   C. 2,3
   D. 2,4

4. A decrease in the production of blood cells by the bone marrow can result in:
   1. anemia.
   2. leukopenia.
   3. thrombocytopenia.
   4. polycythemia.

   A. 1,2,4
   [✓ B.] 1.2,3
   C. 4 only
   D. all of above

5. Radiation is used in the treatment of cancer on the principle that it:
   A. affects cancer cells leaving normal cells unharmed.
   B. penetrates the body to dissove cancer cells and tumor masses.
   [✓ C.] decreases size of tumor and metastatic spread.
   D. is a palliative therapy for extensive metastasis.

6. A patient receiving chemotherapy is subject to various side effects. All of the following are pertinent assessments for complications except:
   A. check urinary samples for hematuria.
   [✓ B.] report an increase in WBC as indication of drug toxicity.
   C. provide mouth rinses for the discomfort of stomatitis.
   D. Check CBC reports for drop in RBC.

7. Mrs. Smith has had radiation treatments to her chest for lung cancer. She is being discharged and complains to the nurse that the radiated area is red and weeping. The nurse explains that this is:
   A. normal and she should wash with soap and water and apply an ointment to prevent infection.
   B. abnormal and should contact her physician for an appointment.
   [✓ C.] normal and she should keep it dry and avoid any heat to the area.
   D. abnormal and requires a pressure dressing with zinc oxide.

Prostatectomy

Mr. H., 80 years old, is admitted with an enlarged prostate gland. He has been unable to void for 12 hours.

8. A foley is inserted to empty the bladder gradually. The best rationale to empty an overextended bladder by degrees is to prevent:
   A. renal collapse and failure.
   B. abdominal cramping.
   [✓ C.] hypotension and possible shock.
   D. weakening and atrophy of bladder wall.

9. The foley catheter is taped to Mr. H's. thigh in order to:
   [✓ A.] eliminate pressure at the penoscrotal angle.
   B. prevent the catheter from kinking.
   C. prevent the catheter from being pulled out.
   D. allow the patient to turn more easily.

10. Mr. H., has a transurethral resection (TUR) with a bilateral vasectomy. He has a 3 way foley with irrigation of the bladder. In which instance should the nurse increase the rate of irrigating solution?
    A. the return is continuous but slow.
    B. the return appears cloudy and dark yellow.
    [✓ C.] the drainage has become bright red.
    D. there is no return of urine or solution.

11. Mr. H. complains of needing to void. The most appropriate thinking by the nurse is:
    A. the catheter may be plugged and needs irrigation.
    B. this is a common feeling after this type of surgery. The urge to void void is being imagined.
    [✓ C.] the urge to void is usually created by the catheter and bladder spasms.
    D. there may be some confusion post-op due to age and type of surgery.

12. After removal of the foley, which of the following symptoms can be expected temporarily?
    A. Painful voiding.
    B. Urinary retention.
    [✓ C.] Dribbling incontinence.
    D. Frequency of urination.

13. The reason Mr. H. had a vasectomy along with a TUR was to:
    [✓ A.] reduce the risk of epididymitis.
    B. eliminate hormone stimulus to the prostate.
    C. decrease the risk of urethritis.
    D. prevent recurrence of prostatic enlargement.

14. Of the 4 surgical removal approaches, which one most frequently requires additional surgery for tissue removal later on?
    A. Perineal.
    B. Retropubic.
    C. Suprapubic.
    [✓ D.] Transurethral.

Hysterectomy

15. Mrs. M., age 25, has been diagnosed with endometriosis. Which of the following statements pertain to this disruption?
    1. It is common in women who have never been pregnant.
    2. It is often correlated with multiparity.
    3. Following menopause the aberrant tissue atrophies.
    4. Early pregnancy is discouraged due to clotting tendencies.
    5. Misplaced endometrium respons to hormonal stimulation.

    A. 1,2,4
    [✓ B.] 1,3,5
    C. 2,3,4
    D. 3,4,5

16. A client undergoing a partial oophorectomy and bilateral salpingectomy will experience the following physical disruption specifically related to the surgery:
    [✓ A.] menses continue, with sterility.
    B. menses continue, without sterility.
    C. menses cease with surgical menopause.
    D. menses cease without surgical menopause.

17. Nursing care for a client 24 hours post anterior pelvic exenteration would include:
    1. Betadine douche qd.
    2. emptying ileal loop drainage q2°.
    3. colostomy care q8°.
    4. coughing and deep breathing q2°.
    5. removing support stocking 1° q shift.

    A. 1,4
    B. 3,4
    [✓ C.] 2,4,5
    D. all of above

18. Mrs. G., 45, is scheduled for a total abdominal hysterectomy for a uterine fibroid tumor. The most frequent occurring symptom of a uterine tumor is:
    A. acute abdominal pain.
    B. abdominal distention.
    [✓ C.] metrorrhagia.
    D. stress incontinence.

19. Following her hysterectomy Mrs. G. may experience all of the following except:
    - A. abdominal distention.
    - [✓ B.] sudden episodes of flushing and perspiration.
    - C. thrombophlebitis of the leg.
    - D. difficulty in voiding.

20. The vaginal drainage on perineal pads for the first few days after hysterectomy normally is a:
    - A. minimal serous drainage.
    - B. moderate mucoid drainage.
    - C. large bloody drainage.
    - [✓ D.] moderate serosanquineous.

21. Of the following types of hysterectomies, which would be the most appropriate for hormone replacement?
    - A. Sub total hysterectomy.
    - B. Total vaginal hysterectomy.
    - [✓ C.] Pan-hysterectomy.
    - D. Radical hysterectomy with node disection.

22. The primary purpose of a Papanicolaou test is to determine:
    - [✓ A.] cancer of the cervix.
    - B. fibroids of the uterus.
    - C. pelvic inflammatory disease.
    - D. endometriosis.

23. Mrs. M., 55, has a pan-hysterectomy following years of metrorrhagia and dysmenorrhea. She has been taking prednisone daily for 2 years. Which complication could occur post-op if this drug is not tapered off gradually?
    - A. Paralytic Ileus.
    - [✓ B.] Adrenal crisis.
    - C. Pulmonary emboli.
    - D. Thrombophlebitis.

Breast Cancer

24. Of the following behaviors, all are characteristic of late breast malignancy except:
    - A. dimpling.
    - B. non-movable.
    - C. discharge.
    - D. nipple retraction.
    - [✓ E.] non-tender.

25. Risk factors associated with breast cancer include all of the following except:
    - [✓ A.] late menarche.
    - B. unmarried; childless.
    - C. mother and aunt with breast cancer.
    - D. Cystic disease of the breast.
    - E. late menopause onset.

26. Mrs. K., is a 38 year old woman who comes to the hospital for evaluation of a breast tumor. She is scheduled for mammography tomorrow. Mrs. K. should know that mammography:
    [✓ A.] cannot distinguish malignancy of a tumor.
    B. requires cooling of body temperature.
    C. involves injection of dye into the breast tissue.
    D. is an accurate, simple diagnostic x-ray.

27. Radical mastectomy is the surgical removal of the:
    A. entire breast.
    B. breast and axillary lymph nodes.
    [✓ C.] breast, muscle, and axillary lymph nodes.
    D. tumor only.

28. Mrs. R., 45 year old, is sent to the operating room where a frozen reveals carcinoma. A left modified radical mastectomy is performed. Your nursing care for the first 24 hours would include all of the following except:
    A. position the left arm on pillows for support and drainage.
    B. observe hemovac for patent suctioning to avoid tension on the suture line.
    [✓ C.] check upper outer quadrant of dressing for bright red blood.
    D. observe left hand for pallor, coolness, swelling and tingling.

29. You, the nurse observe that at 8 p.m. there has been no drainage in the hemovac on your shift. You would:
    [✓ A] call the doctor to come irrigate the tubing.
    B. turn her on the affected side for better drainage.
    C. irrigate with 30 cc of normal saline.
    D. milk the tubing for return.

30. In helping Mrs. R. through the rehabilitation stage of a modified radical mastectomy, the nurse would do which one of the following?
    A. Explain the importance of using a straight razor when shaving axillary hair.
    [✓ B.] Reassure her that her crying spells are normal and that in time they will pass away.
    C. Report her complaint of numbness in the inner aspect of her left arm since this is uncommon.
    D. Encourage ambulation with her right arm in a sling and her posture erect.

31. Mrs. K., 6th day post-op for a left simple mastectomy, is being prepared for discharge. A priority in her teaching should be to:
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32. Which of the following statements is true?
    A. The permanent prosthesis can be worn after the final dressing change.
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   C. should exercise the operative side for at least 2 months.
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34. In radical mastectomy, the appropriate positioning of the arm on the operative side is:
   A. across the chest wall.
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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burn Trauma

Competencies: Describe how a victim of major burn trauma initially responds both physiologically and psychologically to the injury and what interventions will support the victim physiologically and psychologically.

Performance Objectives:

1. State why burn trauma is the most critical, long-term form of trauma humans can survive.
2. List the five (5) major causes of burns.
3. Explain how to stop the burning process.
4. Give six (6) signs of inhalation injury.
5. Identify priorities for emergency care at the site of injury and in the hospital.
6. Describe the effects of burn trauma on body systems.
7. Explain intervention techniques which support physiologic function following major burn trauma.
8. State the importance of hematocrit in estimating fluid losses.
9. List the criteria for regulating fluid replacement in burn victims.
10. Explain the importance of psychological support for burn victims and their families.
11. Describe the preparation of a major burn victim for transport to a burn care center.

Evaluation: Answer 20 objective items on emergency management of burn trauma with 75% accuracy.

Learning Activities:

_______1. View filmstrip Emergency Management of Burn Trauma.

_______2. Read Cosgriff and Anderson, The Practice of Emergency Nursing, pp. 244-254.

_______3. Prepare and submit Case Study 1 or 2.

_______4. Attend class and discuss Case Studies.

Enrichment Activities:

_______1. Visit the local fire department to examine emergency vehicles and their equipment.

_______2. Talk to emergency personnel (dr's, nurses, EMTs, firemen, police, etc.) about personal experiences in emergency management of major burn trauma.

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Student Competency Sheet

Unit IX: Problems related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burn Trauma
Attachment a: Case Study 1

It is nine o'clock in the morning on a hot summer day on a quiet county farm, 250 miles from the nearest hospital emergency department.

Kate Harvey is canning jars of peaches in her old pressure canner when suddenly, as she begins to open it, it explodes. Scalding hot peaches, thick syrup, and broken glass are blown against Kate's face, arms, and chest with great force. Her husband hears her screams and runs in from the barn to find Kate lying on the kitchen floor, burned, bleeding and moaning with great pain. After doing his best to help her, he places her into the back seat of their card.

KATE HARVEY

Age: 52 years	Diabetic, controlled with insulin.
Weight: 190 lbs.	Burn wounds: deep, partial-thickeness.

Directions: Complete Learning Activities 1 and 3 and then answer the following questions. Be prepared to discuss this case in class.

1. What is the first action her husband should take when he discovers Kate? Why?

2. What injuries might complicate Kate's burn wounds? What should her husband do about them?

3. How should Kate's husband care for her burn wounds before transporting her to the hospital? Why?

4. If Kate becomes thirsty and restless during the trip to the hospital, what should be done? Why?

5. What information would be useful for the emergency physician to know in prescribing care for Kate? Why?

6. Why should the I.M. route of drug administration be avoided to control Kate's pain?

7. What treatment takes top priority in Kate's care in the emergency department? Why?

8. Using the chart and tables for calculating TBSA, calculate Kate's total body surface area burned.

9. When should Kate's burn wounds receive attention? Why?

10. How should Kate's burn wounds be dressed before she is transported from the emergency department to a burn care center?

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Student Competency Sheet

Unit IX: Problems Related to Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burn Trauma
Attachment b: Case Study 2

Danny Burton is racing his stock car around the track, attempting to qualify for entry into his first major competition. His right front tire blows. Unable to control his car, Danny sideswipes another driver before crashing into the wall. There is an explosion and a violent burst of flames. Sirens sound as fire truck, ambulance, and Danny's pit crew race toward him.

Pulled from the wreck of his car, Danny is unconscious. His unprotected face is severely burned and his polyester jumpsuit is smoldering the length of his body. Heavy gloves appear to have left his hands undamaged, but his unprotected arms are charred black. His friends and fans quickly cluster about and follow him to the hospital, one mile away, where they make frequent demands of all members of the emergency team for news of his condition.

DANNY BURTON

Age: 23 yrs.	Wears contact lenses.
Weight: 154 lbs.	Burn wounds: 74% TBSA mixed full and deep, partial-thickness

Directions: Complete Learning Activities 1 and 3 and answer the following questions. Be prepared to discuss this case in class.

1. What should be done to stop the burning process after Danny is pulled from his car? Why?
2. What assessments should the ambulance EMT make before transporting Danny to the hospital? Why?
3. Should the EMT remove Danny's contact lenses before transporting him to the hospital? Why?
4. How does Danny's unconsciousness relate to his burn injuries? Why?
5. What assessment will be done to determine if Danny is at risk of inhalation injury?
6. What gastrointestinal interventions will be initiated in the emergency department? Why?
7. What effects might the full-thickness circumferential burns of his arms and thorax have on his ventilation and circulation? Why?
8. What is the best way to manage the continuous barrage of questions and demands from Danny's friends who overflow the emergency department waiting room.
9. How should Danny be prepared for transport to the burn care center 40 minutes away?

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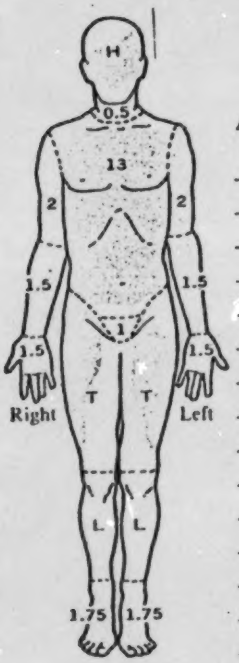
Student Competency Sheet

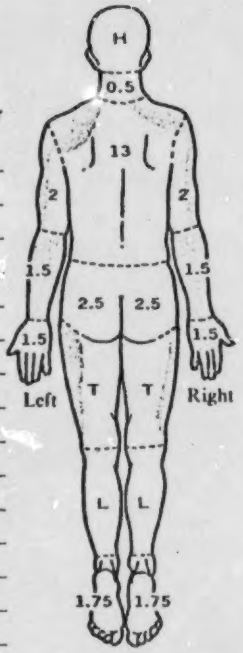
Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burn Trauma
Attachment c: Chart and Tables for Calculating TBSA

Chart and Tables for Calculat[illegible] TBSA


H
0.5
13
2
2
1.5
1.5
1
1.5
1.5
Right
Left
T
T
L
L
1.75
1.75

Burned Areas (%)

Anterior		Posterior
______	Head	______
______	Neck	______
______	Right Arm	______
______	Right Forearm	______
______	Right Hand	______
______	Left Arm	______
______	Left Forearm	______
______	Left Hand	______
______	Trunk	______
______	Buttock	______
______	Perineum	______
______	Right Thigh	______
______	Right Leg	______
______	Right Foot	______
______	Left Thigh	______
______	Left Leg	______
______	Left Foot	______
______	Subtotal	______


H
0.5
13
2
2
1.5
1.5
2.5
2.5
1.5
1.5
Left
Right
T
T
L
L
1.75
1.75

TBSA Burned:

______ %

Percent of Areas Affected by Growth

	Age (yr.)					
	0	1	5	10	15	Adult
H, half of head	9.5	8.5	6.5	5.5	4.5	3.5
T, half of thigh	2.75	3.25	4	4.25	4.5	4.75
L, half of leg	2.5	2.5	2.75	3	3.25	3.5

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burns

QUIZ

COMPLETE THESE STATEMENTS

1. The most critical, long-term form of trauma the human organism can survive is ______________________ ___________________________.

2. The five major causes of burn trauma are:

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

3. Intravenous fluids should be started at the site of major burn trauma only if hospital care will be delayed for ____________________________________ ____.

4. Six signs of inhalation injury are:

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

   f. ____

5. Except for tetanus toxoid and hyperimmune antitetanus globulin, all medications should be given intravenously to the victim of major burn trauma because:

   ____

   ____

   ____

   ____

6. Diagrams of the human body used to chart the extent and depth of burn wounds are identical for adults, children and infants except for areas affected by growth, which include the ______________________________.
______________________________, and ______________________________.

CIRCLE "T" FOR A TRUE STATEMENT AND "F" FOR A FALSE STATEMENT

7. T F Major burn injuries produce complications that differ from those produced by other forms of trauma.

8. T F Synthetic fabrics and jewelry can retain heat and produce tissue damage long after flames have been extinguished.

9. T F Contact lenses should be removed before flooding the eyes with water following chemical burn injury.

10. T F If severe, major burn trauma can produce unconsciousness.

11. T F No time should be wasted in attempting to calculate the extent or depth of burn wounds at the site of injury.

12. T F Small sips of water may be given to the burn trauma patient to ease the thirst created by fluid loss.

13. T F A patient's wounds should be carefully cleansed and covered with an antimicrobial ointment and light gauze dressings before transporting him from a hospital emergency department to a burn care center.

CIRCLE THE LETTER(S) BEFORE CORRECT ANSWERS

14. If a victim of electrical injury is still in contact with the source of electrical current, his rescuer should:

a. pull him away as quickly as possible
b. tell him to roll away from the source of current
c. shut off the current before attempting to touch him

15. Bleeding in a burn trauma victim is caused by:

a. muscle injury from burn trauma
b. non-burn-related injuries
c. burn injuries from chemicals
d. blood vessel injury from burn trauma

16. Rank in order the priorities for emergency care of the burn trauma victim at the site of injury.

_______ a. Examine patient for bleeding or fractures
_______ b. Check the vital signs
_______ c. Stop the burning process
_______ d. Wrap patient in blanket to conserve body heat

17. The use of misted oxygen following inhalation injury will:

    a. moisten the mucociliary lining of the airways
    b. reduce the rate of respirations
    c. prevent alveolar collapse
    d. minimize loss of body water through exhaled air

18. Following major burn trauma, the hematocrit can be expected to:

    a. decrease due to loss of plasma volume
    b. remain unchanged
    c. increase due to loss of plasma volume

19. The flow-rate for postburn intravenous infusion should be calibrated to maintain a urine output of:

    a. 20 to 30 ml. per hour
    b. 60 to 80 ml. per hour
    c. 30 to 60 ml. per hour
    d. 70 to 90 ml. per hour

20. To ease the patient's and family's anxiety following burn trauma, the EMT and all members of the health care team should:

    a. reassure them that everything is being taken care of-- that they can just relax
    b. refer all questions to the physician
    c. answer all questions as truthfully and reassuringly as possible
    d. describe examples of burn trauma victims who have survived with wounds more severe than the patient's

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burn Trauma

ANSWERS TO QUIZ

1. burn trauma

2. a. hot liquids
   b. flash
   c. flame
   d. chemicals
   e. electric current

3. several hours

4. a. burned in closed space or stood upright as clothing burned
   b. burns of face and neck
   c. soot in nose or mouth
   d. nasal hairs or eyebrows singed
   e. brassy cough or change in voice
   f. significant level of carboxyhemoglobin

5. Intramuscular injections would remain sequestered along with edema fluid in peripheral tissues only to be dumped suddenly into the blood stream when sequestered fluids flood back into the general circulation after 48 or more hours postburn.

6. head, thighs and legs.

7. False

8. True

9. False

10. False

11. True

12. False

13. False

14. c

15. b

16. c, b, a, d

17. a and d

18. b

19. c

20. c

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burn Trauma
Case Study 1 Answers and Discussion

1. What is the first action her husband should take when he discovers Kate? Why?

The first action her husband should take is to stop the burning process. The peaches and heavy syrup content of the old pressure cooker will be thick and scalding hot and will tend to adhere to Kate's skin and clothing. Since she is in the kitchen, the fastest way to stop tissue damage from the hot fruit and liquid is to douse her face with cool water and pour a container of cool water over her chest and arms. More water may be used fo flush away bits of fruit and syrup that cling to Kate's skin, but no attempt should be made to pull away material that embedded in her skin. This should be undertaken only after her admission to the hospital. Flushing the burned areas with cool water also will provide immediate relief for the intense pain produced by her deep, partial-thickness burns. Kate's dress and underclothing should be removed, along with her wedding ring and any other jewelry that may retain heat and produce further tissue damage.

2. What injuries might complicate Kate's burn wounds? What should her husband do about them?

Since Kate was standing directly over the pressure cooker when it exploded, scalding hot peaches, syrup, and broken glass struck her with great force. Therefore, she may have received lacerations that could produce serious bleeding. Shards of glass also may have become embedded in her body from the force of the explosion.

To minimize further tissue damage, small protruding pieces of glass that are superficially embedded should be removed. If any protruding shards of glass are deeply embedded, the part should be immobilized and protected with a light dressing until the glass can be removed at the hospital, where hemorrhage can be controlled. Superficial bleeding should be controlled with pressure to the area.

Although Kate's face was exposed to the force of the exploding fruit and glass, here eyes very probably were not burned. The fact that the human eye closes reflexively in a fraction of a second makes the possibility of eye burns very remote. However, flying shards of glass could penetrate her eyelid, or bits of glass could fall into her eye causing extensive damage. Therefore, when water is used to stop the burning process, her face should receive special attention to remove all loose glass particles. If a shard of glass has penetrated through her eyelid, no attempt should be made to remove it. A light dressing should be applied over the eye to keep it closed and as immobile as possible until the glass can be removed under controlled conditions at the hospital.

3. How should Kate's husband care for her burn wounds before transporting her to the hospital? Why?

After stopping the burning process and removing her clothing and jewelry, Kate's husband should wrap her loosely in a clean sheet and cover her with a blanket to help retain her body heat. No ointments, salves, or other preparations should be applied to her burns since they must all be removed when she arrives at the hospital. Not only will the removal waste time unnecessarily, it will be painful as well. However, because her burns are deep partial-thickness wounds, they will create pain that can be reduced significantly by the continous application of compresses soaked in cool water. This could be accomplished by carrying a large container of ice covered with water, from which Kate's husband can exchange compress cloths from time to time during short stops enroute to the hospital.

4. If Kate becomes thirsty and restless during the trip to the hospital, what should be done? Why?

The nature of Kate's burn wounds will produce fluid loss at a rapid and continuous rate, thereby triggering an increasing thirst. However, water should not be given to her, as it may produce nausea and vomiting. With extensive burns of the face, she may be unable to control the vomitus and aspirate fluid. Kate's restlessness will be a neuroendocrine response to the effect of her burn trauma. Rapid ventilation and restlessness should not be discouraged, since they are excellent, natural defenses against possible collapse of pulmonary alveoli from depressed ventilation and congestion caused by lying quietly during the long trip to the hospital.

5. What information would be useful for the emergency physician to know in prescribing care for Kate? Why?

The fact that Kate is a diabetic and that her disease is well controlled by insulin is vital information to give to the emergency physician. All prescriptions for her resuscitation fluids and later nutrition must take into consideration the need to maintain her metabolic balance with insulin. Her physician will also need to know exactly what caused her burns, that she was struck with great force by the hot liquid and glass, and whether or not any glass particles were washed out of her eyes before she arrived at the hospital. Of critical importance will be the exact amount of time that has elapsed between the moment of burn and the beginning of her fluid resuscitation. Her physician will need this information to determine the fluid deficit that must be made up in addition to the ongoing fluid loss that will occur for the next 24-48 hours.

6. Why should the intramuscular route of drug administration be avoided to control Kate's pain?

The only drugs that will be administered intramuscularly will be a booster shot of tetanus toxoid and hyperimmune antitetanus globulin for the early compromises that will be produced in Kate's immune system by the burn trauma. All other medications, including those for pain, will be given intravenously to prevent sequestration with edema fluid in peripheral tissues. If analgesics were given intramuscularly they would accumulate in the interstitium of the injection site, only to be dumped suddenly into the circulation when restored capillary function permits sequestered fluids to flood back into the bloodstream. The effect of this sudden increase in circulating analgesics can be very harmful.

7. What treatment takes top priority in Kate's care in the emergency department? Why?

Plasma volume replacement is the most important and urgent treatment in Kate's care. If perfusion of the tissues of her vital organs is to be maintained, her fluid loss must be overcome as rapidly as possible. Her burns are deep, partial-thickness, and extensive. They will be exuding plasmalike fluid and evaporating water rapidly. Plasma will leak from her general circulation into interstitial spaces. She must receive the proper combination of intravenous fluids calibrated to maintain a urine output between 30 and 50 ml per hour, a hematocrit between 45 and 55, pulse below 110 per minute, and her mean arterial pressure at 80 ml or more. The emergency physician will begin intravenous fluid replacement for re-expansion of her circulating volume, and it will continue as she is transported to the burn center.

8. Using Chart I and accompanying tables, calculate Kate's TBSA burned.

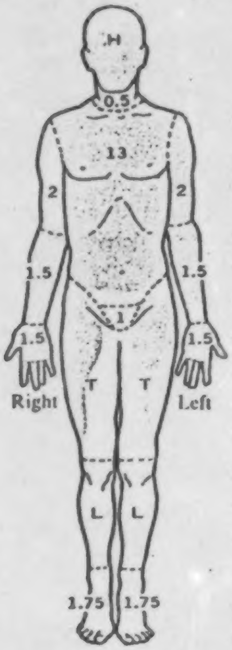


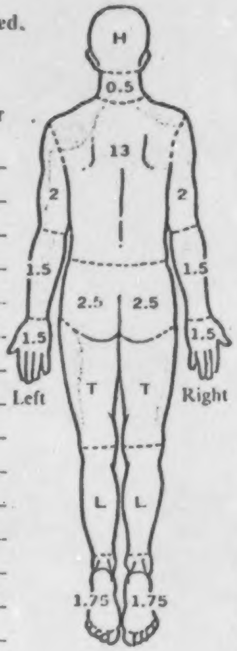
Chart and Tables Completed.

Burned Areas (%)

Anterior		Posterior
2	Head	
0.5	Neck	0.25
2	Right Arm	1
1.5	Right Forearm	1.5
	Right Hand	1.5
2	Left Arm	0.12
1.5	Left Forearm	1.5
	Left Hand	1.5
12	Trunk	2
	Buttock	
	Perineum	
4	Right Thigh	1
	Right Leg	
	Right Foot	
3.5	Left Thigh	1
	Left Leg	
	Left Foot	
29	Subtotal	11.37

TBSA Burned:

40+%



Percent of Areas Affected by Growth

	Age (yr.)					
	0	1	5	10	15	Adult
H, half of head	9.5	8.5	6.5	5.5	4.5	3.5
T, half of thigh	2.75	3.25	4	4.25	4.5	4.75
L, half of leg	2.5	2.5	2.75	3	3.25	3.5

9. When should Kate's burn wounds receive attention? Why?

Although Kate has suffered burns that are extensive and appear very distressing, they will hold low priority in her care. Her physiologic response to the mass of dead or dying tissue is the major concern of her health-care team and creates her need for rapid and expert attention. Only after everything has been done to support her need to compensate for the massive insult to her homeostasis will consideration be given to the actual wounds produced by the burn trauma.

Of course, her physician will evaluate and care for any tissue damage caused by glass shards, but other than that, her burn wounds will receive little treatment until she arrives at the burn care center, where a definite program for their care will begin.

10. How should Kate's burn wounds be dressed before she is transported from the emergency department to the burn care center?

There is no need for dressings of any kind on Kate's burn wounds although soft, nonadherent pads may be placed between any burned surfaces that may come in contact with each other, to provide comfort. The emergency physician may cleanse her burn wounds of any loose materials, but he will make no effort to debride them or to dress them with any antimicrobial. Kate will simply be wrapped lossely in a clean sheet and covered with blankets to provide warmth for her trip by ambulance to the burn care center. The one exception is her hands. They will be placed in splints and carefully wrapped with fine-mesh gauze to maintain maximum extension of the extensor tendons. Since her hands were badly burned, the tissues will tend to swell from rapidly developing edema that could produce rupturing in the extensor tendons if they were permitted to remain in a flexed position.

If Kate has suffered lacerations that required suturing, they, too, will be left without dressings and remain exposed to the air. At the burn care center, Kate will receive her first whirlpool tubbing very soon after admission, during which all her wounds will be cleansed with antiseptic solutions.

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 1: Emergency Management of Burn Trauma
Case Study 2 Answers and Discussion

1. What should be done to stop the burning process after Danny is pulled from his car? Why?

The fastest means for stopping the burning process caused by flames is to use water. Since the fire truck responded to his crash, water is immediately available and should be sprayed generously over Danny, taking care not to direct it to his face. In his unconscious state, he could not manage any drops of water that might enter his nose or mouth. His polyester jumpsuit must be removed as quickly as possible, without regard to burned skin that may come away with it. Synthetic fibers tend to adhere to skin when they become heated, thus extending tissue damage long after flames have been extinguished. After all his clothing and jewelry have been removed, Danny should be gently sprayed to cool any areas of his body still burning.

2. What assessments should the ambulance EMT make before transporting Danny to the hospital? Why

The EMT should check the ABCs critical to any emergency assessment-airway, bleeding, circulation. Because Danny is unconscious, it is vital that he be assessed for adequate ventilation. If he is breathing adequately, oxygen should be started by mask to support his ventilation. He should be examined very rapidly for evidence of bleeding. Burns never cause bleeding. Therefore, if bleeding is discovered, the cause lies elsewhere. The EMT will auscultate Danny's chest or palpate for a carotid pulse to assess the presence of cardiac pulsation. These assessments should be conducted almost simultaneously and take no more than 3 minutes before Danny is gently wrapped in a clean sheet, covered with a blanket, and placed in the ambulance to be transported to the hospital.

3. Should the EMT remove Danny's contact lenses before transporting him to the hospital? Why?

The EMT may detect the presence of contact lenses during the assessment of Danny, but he should make no attempt to remove them since manipulation of the burned skin around Danny's eyes could extend tissue damage. Danny's eyes are in no danger from the lenses since his eyes tend to be immobile in the unconscious state. The EMT should report the presence of the lenses to the emergency department team who will remove them during his care.

4. If the EMTs are trained to administer intravenous fluids, should they contact their base station for permission to start an IV? Why?

No intravenous infusion should be started at the site of Danny's injury. Remember that the hospital, with a fully staffed emergency department, including a physician and vital life support equipment, is just 1 mile away. Traveling just 40 miles an hour, the ambulance will reach the hospital in less than 2 minutes-far less time than it would take to introduce an IV line through burn

4. (continued)

tissue, get an infusion running, secured, and manipulated into the ambulance. In addition, the chances for introducing infectious organisms into Danny's tissues or circulation during an attempt to insert a 16-guage catheter, the smallest size effective for emergency fluid replacement, is very great. Of course, if his injuries had produced hemorrhage, then time taken to begin an intravenous infusion would be justified. But with no hemorrhage, then time taken to begin an intravenous infusion would be justified. But with no hemorrhage, an unconscious and severly burned patient should be transported to the emergency room of the nearest hospital with all possible speed, where definitive therapy can begin.

5. How does his unconsciousness relate to his burn injuries? Why?

No matter how severe burn injuries may be, they never produce unconsciousness. Therefore, Danny's unconscious state is unrelated to his burn trauma. It will be necessary to conduct a neurologic assessment to determine what is causing his unconsciousness.

6. How will the emergency physician assess and determine if Danny is at risk of inhalation injury?

Inhalation injury is highly suspect if two of the following signs are present and virtually certain if there are three.

Burned in a closed space or stood upright as clothing burned
Burns of the face and neck
Soot in nose or mouth
Nasal hairs or eyebrows singed
Brassy cough or change in voice
Significant amount of carboxyhemoglobin in blood

Since Danny presented with all signs but the brassy cough, he is at serious risk of inhalation injury. His physician will examine his oropharynx and hypopharynx to evaluate the extent of injury on admission and determine the need for intubation prior to Danny's transfer to the burn care center.

7. What gastrointestinal interventions will be initiated in the emergency department? Why?

Danny could easily aspirate stomach contents if he should vomit while unconscious. Moreover, because the neuroendocrine response to his burns will produce a paralytic or adynamic ileus in 24-36 hours, a gastrointestinal will be passed to decompress Danny's stomach. In addition, an antacid will be instilled in his stomach while he is in the emergency department and several times more at the burn care center. Research has validated the fact that early, regular instillations of an antacid. postburn, virtually eliminate the occurrence of gastric ulcers, once thought to be an inevitable consequence of major burn trauma.

8. What effects might the full-thickness circumferential burns of his arms and thorax have on his ventilation and circulation? Why?

Full-thickness burns produce a tough, leathery, nonelastic eschar that will permit no expansion of tissues if they swell with edematous fluids. Therefore, pressure is exerted inward from the accumulating interstitial fluid. When full-thickness eschar is circumferential around the thorax or arms, rapidly developing edema pressure can limit thoracic expansion or restrict circulation causing ventilatory or circulatory embarassment. Danny will be monitored very closely for signs of distress from his eschar. If they become significant, his physician will relieve the pressure, releasing the eschar by incising through it to viable tissue.

9. What is the best way to manage the continuous barrage of questions and demands from the crowd of Danny;s friends who overflow the emergency department waiting room?

It must be remembered that Danny;s friends are very worried and very frightened. They need constant assurance that he will live-that he will be okay. Because they are race car drivers or people close to race drivers, they live with the fear that someday they may be where Danny is. That fear is omnipresent in their lives and reates enormous anxiety when one of their members suffers injuries as severe as Danny's. Their demands for constant reassurance must be accepted as signs of the emotional distress they are suffering and of their need for support. Although it is not reasonable to expect all members of the emergency team to turn their attention from Danny and other emergency patients, they can be relieved from the barrage of questions and Danny's friends can be comforted as well if one person is assigned to be liaison between the emergency physician and Danny's friends. The liaison person can provide up-to-the minute information to the group and be with them to help them cope with the situation and their feelings. It is an expenditure of time well worth the investment.

10. How should Danny be prepared for transport to the burn care center, 40 minutes away?

Because Danny's condition will become increasingly critical over the next few hours, both the EMTs in the field and the emergency department team have moved rapidly and expertly to lose as little time as possible in getting him to the burn care center. He will be wrapped in a clean sheet and covered with blankets for warmth. No dressings will be applied to his burn wounds. A nurse will accompany Danny during his 40-minute ambulance ride to the burn care center. He will have IV lines in place to assure adequate access for fluid resuscitation. Collection bags for his urinary catheter and gastric tube will be attached. Oral suction equipment and an aspiration syringe will be carried for possible use. If the physician has inserted a nasotracheal tube to support his ventilation, Danny will receive misted oxygen through it. If not, he will receive misted oxygen by mask.

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Responses to Burns - Skin and Cardiovascular System

Competency: Describe specific responses of the skin and cardiovascular system to burn trauma.

Performance Objectives:

1. Explain the skin's vulnerability to injury from heat.
2. Differentiate between full-thickness and partial-thickness burns.
3. Identify the three forces that maintain homeostatic fluid equilibrium.
4. Explain the disruption of fluid equilibrium following major burn trauma.
5. Describe the dynamics of plasma volume shift following major burn trauma.
6. Identify physiologic responses to burn trauma hypovolemia.
7. State cardiac output changes that precede cardiac failure in major burn trauma.
8. Explain the effect of burn trauma on coagulation mechanisms.
9. Describe the effect of wound evaporation on body heat following burn trauma.

Evaluation: Answer 20 objective items on responses of skin and cardiovascular system to burns.

Learning Activities:

______ 1. View filmstrip Pathogenesis of Burn Trauma Part 1.

______ 2. Read Phipps, Long and Woods, pp. 1509-1510, or Feller and Archambeault, Nursing the Burned Patient, pp. 18-25, 199-208.

______ 3. Prepare and submit Case Study 3 or 4.

______ 4. Complete and submit Vocabulary List.

______ 5. Attend class and discuss case studies.

Enrichment Activities:

______ 1. Prepare a written comparison of hypovolemia due to major burn trauma and other causes of intravascular volume loss.

______ 2. Submit reading reports on two articles that deal specifically with the effect of fluid equilibrium forces and their disequilibrium.

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Responses to Burns - Skin and Cardiovascular System

Vocabulary List: Depth of Burns

1. Superficial partial thickness burn:

2. Deep partial thickness burn:

3. Full thickness burn:

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Responses to Burns - Skin and Cardiovascular System
Attachement a: Case Study 3

It is a cold night in midwinter. Kathy Roberts is standing in her nightgown with her back turned to a small gas heater, warming herself before going to bed. The fabric of her gown suddenly ignites as it comes in contact with the flames of the heater. Within seconds Kathy is enveloped in flames as her gown burns. Her mother acts quickly to extinguish the flames by throwing a blanket over Kathy, but she has been burned extensively over the posterior side of her body. The anterior portion of her body and her head are less badly injured with no visible burns of her face.

KATHY ROBERTS:

Age: 15 yr.
Weight: 106 lbs.

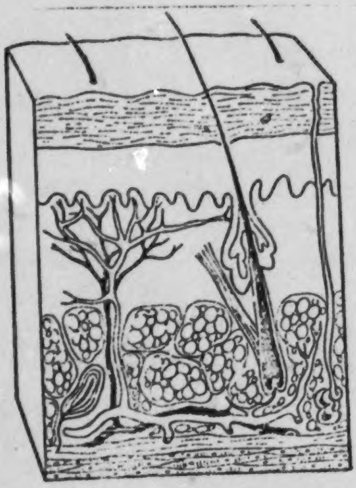
Burn wounds: 68% mixed full-thickness, superficial, and deep partial-thickness.

Directions: Complete Learning Activities 1 and 3 and answer these questions. Be prepared to discuss this case in class.

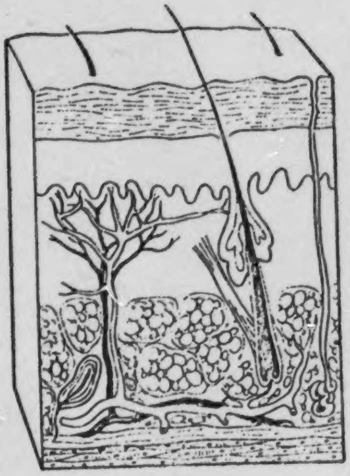
1. Indicate on the drawings in attachment b how deeply skin tissue has been destroyed in Kathy's superficial partial-thickness; deep partial-thickness; and full-thickness burn wounds.
2. Describe the appearance of Kathy's burn wounds according to the depth of tissue damage.
3. Will Kathy experience pain from her burn wounds? Why?
4. What skin functions will be lost in Kathy's deep partial-thickness burn wounds? Why?
5. What functions will be lost in Kathy's full-thickness burn wounds? Why?
6. What skin structures will inhibit removal of burned tissue from Kathy's wounds? Why?
7. What are the three regulatory forces that normally maintain Kathy's fluid equilibrium and how do they function?
8. How will Kathy's burn trauma disrupt her homeostatic fluid equilibrium? Why?
9. How could Kathy's burn injuries trigger hypovolemic shock?
10. What problem could develop if excessive amounts of electrolyte fluids are used to overcome impending hypovolemia?

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Response to Burns - Skin and Cardiovascular System
Attachment b: Sketches of body tissue indicating depth of burns

Sketches of body tissue indicating depth of burns.



A. Superficial partial-thickness burn



B. Deep partial-thickness burn

C. Full-thickness burn

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Response to Burns - Skin and Cardiovascular System
Case Study 3 Answers and Questions

1. Indicate on the drawings in Figure 3 how deeply skin tissue has been destroyed in Kathy's superficial partial-thickness, deep partial thickness and full-thickness burn wounds.

2. Describe the appearance of Kathy's burn wounds according to the depth of tissue damage.

   The portion of Kathy's skin that received superficial partial-thickness damage from her burn trauma will appear swollen, dry, and pink to red in color. Blistering may be present, but it will be restricted to the outermost epidermis layers. Her deep partial-thickness wounds will look swollen and red or perhaps mottled in color. They will be moist, since epithelial cells and part of the corium have been destroyed, permitting the escape of plasmalike fluid seeping from the walls of the capillary network in the bed of the wound. Kathy's full-thickness burns will look dry, charred, and leathery. Or they may appear pearly white in contrast to adjacent tissue. Although the eschar of these wounds appears dry, it is very porous and will permit evaporation of body fluids resulting in significant insensible water loss.

3. Will Kathy experience pain from her burn wounds? Why?

   The depth of tissue destruction will determine whether her wounds produce pain. Nerve endings that transmit pain impulses are richy supplied in the stratium germinativum. Therefore, both her superficial and deep partial-thickness burn wounds can be expected to produce painful sensations that will requireanalgesics for control. On the other hand, her full-thickness burns have destroyed all structures in her skin, including the nerve endings for reception of pain sensations and the plexus deep in the dermis from which these endings and their fibers originate. Therefore, her most serious burns will produce no pain or other sensation.

4. What skin functions will be lost in Kathy's deep partial-thickness burn wounds? Why?

   The portions of her skin that have received deep partial-thickness wounds have lost the ability to act as a vapor barrier to prevent the evaporation of body water to the atmosphere. The continuous flow of water through these burns could place Kathy at risk of hypothermia. In addition, her deep partial-thickness burns have destroyed the skin's function as a barrier to the invasion of bacteria. The constant seepage of plasmalike fluid into the wounds will produce an ideal medium for the colonization of microorganisms that can place Kathy at serious risk of invasive infection.

5. What functions will be lost in Kathy's full-thickness burn wounds? Why?

All skin functions will be lost in her full-thickness burn wounds. Since all skin structures have been destroyed in these areas, the abilities to act as a vapor barrier to prevent the loss of body water and to prevent the invasion of bacteria havebeen lost. In addition, the vital function of regeneration has been lost. Before damaged or destroyed skin layers can be regenerated, the innermost layer of epidermis-the stratum germinativum-must be intact to produce cells for renewal of the layers above it. Since full-thickness burns also destroy the epidermal appendages of the stratum germinativum that penetrate below it as sheaths for sebaceous glands, hair follicles, and sudoriferous glands, there is no tissue left to regenerate skin surface lost. Therefore, all of her full-thickness wounds will require autografting in the presence of total loss of skin function in areas of full-thickness burn wounds.

6. What skin structures will inhibit removal of burned tissue from Kathy's wounds? Why?

The normal function of the collagen fibers in Kathy's skin structures will inhibit removal of burned tissue. Collagen fibers serve to anchor skin layers to underlying tissues and extend from the dermis down into the areolar and subcutaneous adipose tissue in the deeper structures. These tough, thread-like fibers prevent removal of necrotic tissue from burn wounds and often must be incised to release their hold. Eventually they will disintegrate to permit removal of eschar, but it can be risky to wait for their destruction since the necrotic eschar presents a serious threat of invasive infection if it is allowed to cover viable tissue for any length of time.

7. What are the three regulatory forces that normally maintain Kathy's fluid equilibrium and how do they function?

Normally, three forces combine to maintain a homeostatic fluid equilibrium between intravascular and interstitial spaces: the colloid osmotic pressure, the hydrostatic capillary pressure, and the relative impermeability of the capillary walls. The colloid osmotic pressure is created by the concentration of colloid molecules in body fluids; the hydrostatic capillary pressure is created by the pumping action of the heart. The difference in pressure gradients between the colloid osmotic and hydrostatic capillary pressures on both sides of the capillary wall combine with the relative impermeability of the capillary membrane to permit only 15% of the intravascular plasma volume to filter through the capillary wall into the interstitial space. Normally, this assures that most of the plasma volume will remain within the vascular compartment to maintain the circulating volume for tissue perfusion.

8. How will Kathy's burn trauma disrupt her homeostatic fluid equilibrium? Why?

For reasons not entirely clear, capillaries respond to burn trauma by losing the relative impermeability of their walls. They become excessively permeable and permit the rapid movement of body fluids from the vascular compartment to the interstitium. Therefore, Kathy's burn trauma will produce loss of capillary wall integrity not only in her burned tissues but throughout her body as well. With the loss of capillary wall resistance, the force of the hydrostatic pressure will drive plasmalike fluid through weakened capillary membranes, markedly increasing the colloid concentration in the interstitium. Therefore, the massive shift of fluid from the intravascular to the interstitial

8. (continued)

comparment will create abnormal colloid osmotic and hydrostatic capillary pressure gradients that will destroy their ability to function as barriers to excessive fluid movement into the interstitium. The movement of the fluid is so rapid that the lymph system and venous capillary network are unable to return it to the general circulation.

9. How could Kathy's burn injuries trigger hypovolemic shock?

Kathy will lose circulating volume very rapidly as fluids leak out of her vascular compartment into her interstitium, postburn. She will literally lose body fluids INTO herself. Although the fluid is still in her body, it is sequestered as edema throughout her tissues and is physiologically lost to her until her capillary network heals sufficiently to permit its return to her circulation. Meanwhile, she is at serious risk of hypovolemic shock from this ongoing loss of plasma volume.

10. What problem could develop if excessive amounts of electrolyte fluids are used to overcome impending hypovolemia?

Remember that Kathy is suffering the loss of colloids from her vascular compartment at a rapid rate. If she receives excessive amounts of electrolyte fluids during her resuscitation, her deficient reserve of intravascular colloids will be diluted, creating a critical drop in intravascular colloid osmotic pressure which normally serves to prevent the escape of plasma from her vascular compartment. In addition, excessive electrolyte fluids will tend to increase her hydrostatic capillary pressure, which, when unopposed by her weakened intravascular colloid osmotic pressure, will drive resuscitation fluids through capillary walls into her already flooded interstitium.

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UnitIX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Response to Burns - Skin and Cardiovascular System
Attachment c: Case Study 4

Juan Garcia is an elderly man, living with his eldest unmarried daughter. Juan suffered a stroke recently and has lost the use of his left side. He spends most of his day sitting in his comfortable old armchair, smoking cigarettes and watching TV. Late this afternoon, Juan dozed off, letting his burning cigarette fall between the cushion and upholstered arm of his chair. Soon the smoldering cushion burst into flames that spread to his clothing, awakening the hemiplegic old man. In terror he attempted to pull himself out of the chair by grasping the electric wire running from the table lamp by his chair. Flames had destroyed the old fabric insulation on the wire where Juan grasped it, exposing him to the full force of 110 volts of electricity. His daughter was able to disrupt the flow of current by pulling the cord from the wall plug before she pulled her father to the floor and extinguish his burning clothing by rolling him on the carpet.

JUAN GARCIA

Age: 73 yr.
Weight: 97 lbs.

Burn wounds: 45% TBSA -- Mixed full-thickness and deep partial-thickness.

Directions: Complete Learning Activities 1 & 3 and answer these questions. Be prepared to discuss this case in class.

1. What agents have caused injury to Juan's surface tissues? Which agent may create the greatest tissue destruction? Why?

2. Which of Juan's body tissues are the most vulnerable to injury by electric current? Why?

3. What delayed complication could develop in Juan's vascular system as a response to electric injury? Why?

4. What is the importance of Juans hematocrit following his burn trauma?

5. How could the effect of his burn trauma create an immediate cardiac output problem?

6. What acid-base imbalance could lead to cardiac failure as Juan's body responds to his burn trauma? Why?

7. How will Juan's platelet and coagulation mechanisms respond to his burn trauma?

8. When should surgical excision of his eschar be avoided? Why?

9. What factors could contribute to significant body heat loss following Juan's burn trauma? Why?

10. How should early signs of hypothermia be detected during Juan's postburn care? Why?

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Response to Burns - Skin and Cardiovascular System
Case Study 4 Answers and Discussion

1. What agents caused injury to Juan's surface tissues? Which agent may create the greatest tissue destruction? Why?

   Two agents caused injury to Juan's surface tissues: flame and electric current. Of the two, electric current is the more potentially harmful. Although he may have suffered extensive burn wounds from the effects of flames, the smaller surface injuries caused by the electric current cover an invisible extension of cellular destruction into his deep body tissues. This is because electric current always seeks the ground. When Juan grasped the exposed lamp wire, the current traveled from it to his hand, through his body, and on into the floor of his room, and from there to the earth. As it traveled through his body, it literally coagulated tissue in deep structures, creating an amount of injury that will not be known until many days later.

2. Which of Juan's body tissues are the most vulnerable to injury by electric current? Why?

   Electric current always seeks the path of least resistance to reach the ground. In the human body, nerve tissue offers the least resistance while vascular tissue, muscle, skin, and fat offer increasing resistance in descending order, with bone being the most resistant of all tissue. It could be expected that Juan may suffer neural, vascular, and muscle destruction that could present serious complications in his postburn recovery.

3. What delayed complication could develop in Juan's vascular system as a response to electric injury? Why?

   Because the human vascular network is extremely conductive to electric current, Juan can be expected to be at risk of extensive intravascular coagulation. The coagulative process will not be limited to the moment of injury but will continue for several days and could cause thrombotic changes in major vessels, leading to ischemia of his vital organs. This could be especially hazardous for Juan since his health history includes a major cerebral vascular accident, and it can be assumed that his vascular system already was weakened by atherosclerotic changes before he suffered electrical injury to it. When added to his physiological responses to his extensively burned skin, the complications produced by electric current destruction could become lethal.

4. What is the importance of Juan's hematocrit following his burn trauma?

   There is a direct relationship between plasma loss in burn trauma and the concentration of the red cell mass or the hematocrit. Therefore, since Juan has suffered blood volume loss from no other source, his hematocrit will be an excellent indicator of plasma loss. His fluid replacement therapy will be calculated to provide sufficient intravascular expansion to maintain the red cell mass, or hematocrit, between 40% and 45%.

5. How could the effect of his burn trauma create an immediate cardiac output problem?

For reasons not clearly understood, major burn trauma can trigger a precipitous drop in cardiac output in the absence of any significant decrease in blood volume. The prehypovolemic reduction in cardiac output can produce as much as a 50% decrease in the volume of blood pumped by the heart into the circulation. If Juan should suffer this complication in his response to his burn trauma, the consequences could be ominous indeed. When combined with factors such as age, a compromised cardiovascular system, and the multisystem assault of his burn and electric injuries, recovery could be very doubtful.

6. What acid-base imbalance could lead to cardiac failure as Juan's body responds to his burn trauma? Why?

A marked increase is his potassium ion level could trigger severe dysrhythmias that may produce cardiac failure. The increased level of serum potassium is created when his normal body cells make an immediate response to his need for increased plasma volume by releasing their potassium-rich fluid. More potassium is added to his serum when cells damaged by burn trauma leak their potassium. The combined effect of these increases in serum potassium could be an especially troublesome problem for Juan at his age and will require very close monitoring and control of his ion concentrations.

7. How will Juan's platelet and coagulation mechanisms respond to his burn trauma?

Major burn trauma produces a dramatic reduction in the platelet count with malfunction in the remaining platelets. This complication can be expected as part of Juan's response to his burn trauma and partly as the result of dilution of blood factors by intravenous fluids used to reexpand his vascular space. His platelet count can be expected to be lowest between 24 and 48 hours postburn. By the end of the first week his platelet count will return to normal and then become supernormal from the second to fifth weeks. Debridement or surgical excision of eschar during this supernormal period will result in extremely rapid coagulation of bleeding surfaces.

8. When should surgical excision of his eschar be avoided? Why?

If at all possible, excision of eschar or any other surgical procedure should be avoided during the period when Juan's platelet malfunction and hypocoagulability reach their peak-approximately during 24-48 hours postburn. During this period, severe bleeding may be produced that will stop with prolonged, direct pressure but will begin again within an hour and cannot be stopped by any mechanical means. The blood loss from such bleeding is usually slow and oozing. But the fact that it is continuous means that exsanguination can occur during this period of hypocoagulation.

9. What factors could contribute to significant body heat loss following Juan's burn trauma? Why?

First and foremost, the extensive nature of his burn wounds places Juan at serious risk of body heat loss. His skin surface has lost its ability to serve as a thermoregulator and will continuously evaporate water from burn wound surfaces. In addition, the fact that Juan weighs just 44 kg

9. (continued)

indicates that he is a very thin man with little substrate tissue to provide insulation from the environment. He will require very close monitoring and protection to avoid devastating effects from postburn body heat loss.

10. How should early signs of hypothermia be detected during Juan's postburn care? Why?

Juan's skin temperature will be continously monitored to detect early signs of hypothermia. This is because his skin temperature will produce a significant drop long before events have produced body heat loss sufficient to lower his core (rectal) temperature. Because Juan is at serious risk of hypothermia it will be critically important to take corrective measures to reverse skin temperature decreases before the harmful effects of hypothermia can affect the function of his compromised deep body structures.

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 2: Response to Burns - Skin and Cardiovascular System

QUIZ

COMPLETE THESE STATEMENTS

1. The largest organ in the body is the ______________________________.

2. Tissue destruction begins when the temperature of the skin surface reaches ____________________ degrees celsius.

3. Destruction of the ____________________ ____________________ layer of the epidermis exposes the body to rapid water evaporation and hypothermia.

4. Destruction of the ____________________ ____________________ layer of the epidermis and its appendages prevents the generation of new epithelial tissue for skin resurfacing following burn trauma.

5. Three hemodynamic forces combine to maintain fluid equilibrium between intravascular and interstitial spaces. These are the ____________________ ____________________ ____________________, the ____________________ ____________________ ____________________ and the relative impermeability of ____________________ ____________________.

6. The body's initial response to postburn hypovolemia includes three life-sustaining actions. These are: to maintain ____________________ pressure; to ____________________ vital organs; and to maintain ____________________ cellular metabolism with available blood volume.

7. The best index of body heat loss is serial readings of ____________________ temperature.

CIRCLE "T" FOR A TRUE STATEMENT AND "F" FOR A FALSE STATEMENT.

8. T F Full-thickness burn wounds are excruciatingly painful.

9. T F Muscle death from massive vascular necrosis is common following electrical injury.

10. T F All major organ systems are deranged and vulnerable to failure following major burn trauma.

11. T F In the presence of deranged pressure gradients across capillary membranes following major burn trauma, fluid shifts from the intravascular to the interstitial space.

12. T F The lymph system and venous capillary network absorb interstitial fluid and return it to the general circulation at the same rate as it is filtered from the intravascular compartment to the interstitium following burn trauma.

13. T F The victim of major burn trauma literally loses plasma into himself and is at great risk of hypovolemic shock since the sequestered plasma is physiologically lost to him.

14. T F The evaporation rate of free water from burn wounds can be 70 times greater than from normal skin.

MATCH THE LEFT COLUMN TO THE DESCRIPTIONS ON THE RIGHT

15. a. Superficial, partial-thickness burns

b. Deep, partial-thickness burns

c. Full-thickness burns

_______ Swollen, dry, soft, pink to red, painful

_______ Dry, charred, leathery or pearly white, insensitive to pain

_______ Swollen, moist, red or mottled, very painful

CIRCLE THE LETTER(S) BEFORE CORRECT ANSWERS

16. Whether human skin will suffer actual damage from exposure to heat energy depends upon:

a. the source of the heat
b. the time of exposure to the heat
c. the intensity of the heat
d. all of the above

17. Rank in order the tissues that offer the least resistance to the passage of of electric current.

_______ a. Muscle tissue
_______ b. Skin tissue
_______ c. Nerve tissue
_______ d. Vascular tissue
_______ e. Bone tissue
_______ f. Fat tissue

18. During postburn fluid resuscitation, excessive infusions of electrolyte fluids can produce:

a. dilution of intravascular colloids
b. increase in intravascular hydrostatic pressure
c. critical drop in colloid osmotic pressure
d. flooding of the interstitium
e. all of these
f. none of these

19. Cardiac output following major burn trauma may be compromised by:

    a. hemoconcentration of the red cell mass
    b. a pre-hypovolemic drop in cardiac output
    c. hypovolemia from loss of plasma volume
    d. high serum potassium levels
    e. all of these
    f. none of these

20. The body's response to burn trauma triggers a dramatic drop in platelet count that:

    a. reaches the lowest level 6 hours postburn
    b. is associated with uncontrolled bleeding from injured blood vessels
    c. produces a slow, oozing of blood that can be stopped permanently with electric cautery
    d. can produce exsanguination during peak bleeding time

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Module A: Management of the Person With Burns
Lesson 2: Response to Burns - Skin and Cardiovascular System

ANSWERS TO QUIZ

1. skin
2. 44
3. stratum corneum
4. stratum germinativum
5. colloid osmotic pressures, hydrostatic capillary pressures, capillary walls
6. arterial, perfuse, aerobic
7. skin
8. False
9. True
10. True
11. True
12. False
13. True
14. True
15. a,c,b
16. b and c
17. c,d,a,b,f,e
18. e
19. e
20. b and d

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 3: Responses to Burns - Major Organ Systems

Competency: Describes specific pulmonary, renal, cerebral, psychological, gastrointestinal and metabolic responses to major burn trauma.

Performance Objectives:

1. Discuss major burn trauma as a multi-system assult.
2. Describe the mechanism that produces inhalation injury.
3. Explain the response of the pulmonary system to burn trauma.
4. Detail responses of the renal system to burn trauma.
5. State criteria of adequate fluid replacement following burn trauma in terms of excretion of sequestered fluids.
6. Explain cerebral responses to major burn trauma.
7. Describe the effect of underlying organic and psychological conditions on cerebral responses to major burn trauma.
8. List the neurohormonal effects of burn trauma on the gastrointestinal system.
9. Specify prevention of gastrointestinal ulceration following major burn trauma.
10. Describe the effect of major burn trauma on cellular metabolism.
11. Identify the need for hyperalimentation to overcome metabolic deficits.

Evaluation: Answer 20 objective items on responses of major organ systems to burn trauma.

Learning Activities:

______ 1. View filmstrip Pathogenesis of Burn Trauma Part II.

______ 2. Read Feller and Archambeault, Nursing the Burned Patient, pp. 214-222, 248-253, 266-268, 280-288, 270-279, 303-306.

______ 3. Prepare and submit Case Studey 5 or 6.

______ 4. Attend class and discuss case studies.

Enrichment Activity:

______ 1. View filmstrip Fluid Resuscitation in Burn Trauma.

Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 3: Responses to Burns - Major Organ Systems
Attachment a: Case Study 5

Tim Leonard works as a foreman in the fabricating department of a large linoleum manufacturing plant. Just before quitting time, he noticed some smoke coming from beneath the door that led to the warehouse area where polyvinyl pellets were stored for use in manufacturing the linoleum. When Tim opened the door, clouds of acrid smoke poured out along with sheets of flame. Fellow workers, responding to the fire, found Tim about 200 feet from the burning materials, where he had collapsed, unconscious and badly burned. His clothing had been partially destroyed by the flames but was not burning when his rescuers reached him. Tim regained consciousness by the time the paramedic truck from the fire department arrived but was given humidified oxygen continuously in the ambulance on the way to the hospital.

TIM LEONARD

Age: 48 yr.
Weight: 230 lbs.
Height: 173 cm
Heavy smoker with moderately advanced chronic obstructive pulmonary disease.
Burn wounds: 52% mixed full and deep partial-thickness.

Directions: Complete Learning Activities 1 & 2 and answer these questions. Be prepared to discuss this case in class.

1. What is the most immediate threat to Tim's survival from his burn trauma? Why?
2. What factors would combine to increase the severity of Tim's inhalation injury? Why?
3. How will Tim's pulmonary tissues respond to the effects of his burn trauma? Why?
4. What precautions should be taken in the administration of intravenous fluids to overcome the hypovolemia produced by his burn trauma? Why?
5. What kinds of pulmonary complications could occur late in Tim's postburn care?
6. What changes in Tim's pulmonary tree would predispose to infectious care?
7. Why did Time lose consciousness very shortly after he was burned?
8. Will Tim's overweight condition be helpful in meeting the hypermetabolic demands of his burn injuries? Why?
9. What is the mechanism that will trigger Tim's inflated metabolic rate?
10. What problem may develop as the result of rapid, gross increases in Tim's caloric intake to meet his inflated metabolic needs. How can it be managed?

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UnitIX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 3: Responses to Burns - Major Organ Systems

QUIZ

COMPLETE THESE STATEMENTS

1. Inhaled toxic gases dry and destroy the ______________________ of the tracheobronchial mucosa, leaving no means to bring up secretions and other pulmonary debris.

2. Vasoconstriction in peripheral vascular beds is produced by __________________ as an early response to the stress of burn trauma.

3. The __________________ __________________ ______________________

   ______________________ or A.R.D.S. may be an early or late complication

   of surfactant impair adequate gas exchange.

4. ______________________ is a normal response by the kidneys to ADH,

   aldosterone, and reduced cardiac output following major burn trauma.

5. Postburn gastrointestinal ulceration, or "Curling's Ulcer," can be prevented by instilling an antacid at intervals that will maintain the

   gastric pH at __________________________.

6. The gross loss of body heat in major burn trauma can consume as much as

   ______________________ to ______________________ calories per day.

7. High calorie nutritional support in major burn trauma may produce a

   ___________________________ that is temporary and easily reversed

   with supplemental insulin injections.

CIRCLE "T" FOR A TRUE STATEMENT AND "F" FOR A FALSE STATEMENT

8. T F Pulmonary complications are the most common cause of death following burn trauma.

9. T F Polyvinyl chloride, the most common ingredient in thousands of plastic products, decomposes at a very high temperature to a gas that is toxic to pulmonary tissues.

10. T F The pulmonary bed is better able to tolerate an influx of interstitial fluid than are the tissues of other vital organs.

11. T F When the stress response to burn trauma is prolonged, thromboemboli may be washed from peripheral capillaries into the pulmonary microcirculation produce ischemic damage.

12. T F Peripheral arterial desaturation and cyanosis from postburn A.R.D.S. will usually respond to the administration of 100% oxygen.

13. T F An apparently normal urine output can occur in the presence of postburn renal dysfunction and mask the fact that urine output is not keeping pace with the infusion of intravenous fluids.

14. T F The absence of diuresis when interstitial edema fluids are flooding back into the general circulation to be excreted is the hallmark of excellent fluid management in major burn trauma.

CIRCLE THE LETTER(S) BEFORE CORRECT ANSWERS

15. Inhalation injury in burn trauma is caused by:

a. burning of pulmonary mucosa by hot gases.
b. inhalation of incompletely burned materials
c. violent coughing during smoke inhalation
d. inhalation of toxic gases

16. Interstitial pulmonary edema following burn tauma produces:

a. decreased compliance
b. shunting
c. negative nitrogen balance
d. alveolar collapse
e. hypoxia

17. The victim of major inhalation injury will be at great risk with markedly reduced chance for survival if he:

a. is a smoker
b. is psychotic
c. is elderly
d. has C.O.P.D.
e. all of the above

18. Death of normal kidney tissue may occur when renal tubules are exposed to:

a. hypertonic saline infusions
b. hypotonic saline infusions
c. nephrotoxic drugs
d. free hemoglobin or myoglobin

19. Cerebral responses to postburn hypoxia may include:

a. disorientation
b. loss of memory
c. stupor
d. convulsion
e. coma

20. Gastrointestinal responses to the stress of burn trauma include:

   a. splanchnic vasoconstriction
   b. adynamic or paralytic ileus
   c. acute gastric dilatation
   d. gastrointestinal ulceration
   e. increased peristalsis

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UNITIX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 3: Responses to Burns - Major Organ Systems

KEY TO QUIZ

1. cilia
2. catecholemines
3. adult respiratory distress syndrome
4. Oliguria
5. 7.0
6. 6,000 10,000
7. pseudodiabetes
8. True
9. False
10. False
11. True
12. False
13. True
14. True
15. b and d
16. a,b,d,e
17. a,c,d
18. c and d
19. a,c,d,e
20. a,b,c,d

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 3: Responses to Burns - Major Organ Systems
Case Study 5 Answers and Discussion

1. What is the most immediate threat to Tim's survival from his burn trauma? Why?

   Inhalation injury is the most immediate threat to Tim's survival. He is at risk of pulmonary insufficiency from the effects of the fumes he inhaled at the site of his injury. The damage to his pulmonary tree does not result from actual burning of the tissues since the mucosa of the trachea and bronchi is protected by its ability to vaporize and cool inhaled gases before they can produce burn injuries. Tim will suffer damage to his lung tissues as the direct result of inhaling particles of incompletely burned materials that come in direct contact with his tracheobronchial epithelium and alveoli. Such damage can produce a significant decrease in gas exchange vital to tissue perfusion.

2. What factors could combine to increase the severity of Tim's inhalation injury? Why?

   First, Tim's inhalation injury will be particularly severe because the fumes he inhaled were produced by the decomposition of polyvinyl chloride pellets as they melted in the fire. Hydrogen chloride, a substance extremely toxic to pulmonary mucosa, was released and drawn into his lungs. When combined with the carbon monoxide produced as the flames consumed atmospheric oxygen, the hydrogen chloride created conditions for the most severe damage possible to Tim's pulmonary tree.

   Second, Tim is a heavy smoker with moderately advanced chronic obstructive pulmonary disease. His normally compromised alveolar bed will greatly compound the pulmonary insufficiency created by his inhalation injury. He is at great risk of progressive alveolar collapse, shunting, and decreased compliance and will require immediate and continuous support to increase his chances for survival of his inhalation injury alone.

3. How will Tim's pulmonary tissues respond to the effects of his burn trauma? Why?

   For reasons not clearly understood, capillary walls become hyperpermeable in the presence of burn trauma. This loss of membrane integrity occurs throughout the body. Therefore, Tim's pulmonary capillary network can be expected to become excessively permeable to the passage of plasma leaking from the vascular compartment to the pulmonary interstitium. When the edema produced by the toxic fumes inhaled by Tim is added to this influx of interstitial fluid, it will create a pulmonary fluid overload that can create serious deficits in the oxygen made available by the lungs for perfusion of body tissues.

4. What precautions should be taken in the administration of intravenous fluids to overcome the hypovolemia produced by his burn trauma? Why?

Tim's pulmonary capillary bed is already compromised by excessive interstitial fluid from his response to burn trauma and inhalation injury. Therefore, every precaution should be taken to avoid use of excessive amounts of IV fluids to overcome his hypovolemia because any volume of IV fluid that exceeds the physiologic ability of the left ventricle to pump it into the general circulation will back up in the left atrium. When the atrium can no longer contain the increased fluid volume, back-pressure will be created on the pulmonary veins and on into the pulmonary capillary bed. Unrelieved, this back-pressure will exert additional pressure against the abnormally permeable pulmonary capillary beds, driving still more plasma into the flooded pulmonary interstitium.

5. What kinds of pulmonary complications could occur late in Tim's postburn care?

Two to five days postburn, pulmonary microembolism may present as a consequence of the combined effect of Tim's neuroendocrine responses to burn trauma and the replacement of vascular fluid volume. Catecholamines will have produced vasoconstriction to reduce blood flow to peripheral vascular bed and conserve arterial pressure with available plasma volume. If Tim's hypovolemia goes unrelieved for too long, this stress response may produce intravascular coagulation and thrombi in the constricted vascular beds. Then, with adequate fluid resuscitation and the return of normal blood flow to peripheral vessels, thrombi may become dislodged and wash through this circulation to obstruct pulmonary microcirculation.

Such obstruction could lead to ischemia and eventual extravasation through vessel walls into interstitial and alveolar spaces. Other complications may include loss of pulmonary surfactant, with the production of the adult respiratory distress syndrome (ARDS), with blood shunted from poorly ventilated alveoli and peripheral arterial desaturation and cyanosis that will not respond to the administration of 100% oxygen.

6. What changes in Tim's pulmonary tree would predispose to infectious disease? Why?

In addition to the chronic obstructive pulmonary disease (COPD) from which he suffered prior to his burn trauma, Tim can be expected to be at serious risk of microorganism invasion of his boggy, congested, mucus-plugged lungs. The damage done to his pulmonary tissues by the toxic fumes he inhaled and the ongoing leakage of plasma into his pulmonary interstitium create an ideal medium for the colonization of bacteria. One of the most serious complications Tim will face is pneumonitis, which may present a week or more postburn.

7. Why did Tim lose consciousness very shortly after he was burned?

Tim's alveoli were exposed to very high concentrations of hydrogen chloride and carbon monoxide at the site of his injury. These gases rapidly reduced hemoglobin concentrations vital to the perfusion of all body tissues. Because the cerebral neural cells are exceedingly sensitive to the slightest decrease in arterial oxygen levels, they are the first to suffer disruption when oxygen tension drops below that necessary for perfusion of brain cells. When Tim's brain cells were deprived of oxygen, unconsciouness followed. Had he been unable to stumble away from the toxic fumes before he collapsed, the continued exposure to critically low oxygen levels would have led to cerebral death in a very short time.

8. Will Tim's overweight condition be helpful in meeting hypermetabolic demands of his burn injuries? Why?

Tim is markedly overweight for his height, but his excessive body fat will do little to help him meet the hypermetabolic demands of his burn injuries since energy production from body fat is a process too slow to equal the speed with which Tim's burned skin surfaces will develop hypercaloric needs. Tim has a very limited hepatic store of carbohydrate, equal to about 3000 calories. Since his burn will create a possible demand of up to 10,000 calories each day, his readily available store of carbohydrates was exhausted almost as soon as his burn injuries occurred! Moreover, if adequate replacement of his carbohydrate stores is not made, Tim will catabolize LEAN body tissue to meet the enormous demands of his burn injury.

9. What is the mechanism that will trigger Tim's inflated metabolic rate?

The mechanism that triggers Tim's inflated metabolic rate primarily involves his body's struggle to maintain its heat. Because his burns are extensive, there is an enormously accelerated rate of evaporation of his body water through his wounds to the atmosphere. His average loss of water could amount to as much as 4-10 liters each day if his burns are totally exposed. With the water loss there is also loss of body heat which serves to vaporize the water to the atmosphere. Without the protection of intact skin surfaces to retain body heat and water, both escape to the atmosphere at rates that can place Tim at serious risk of hypothermia. When the effect of body heat loss through radiation from his wounds is added to the effect of evaporation, Tim may require hyperalimentation to provide enough calories to meet energy requirements that will maintain his body heat at homeostatic levels.

10. What problem may develop as the result of rapid, gross increases in Tim's calorie intake to meet his inflated metabolic needs? Why?

Tim will be provided with a high-carbohydrate, high-calorie source of nutrition to meet his inflated metabolic needs. As a result, he may develop a pseudodiabetes that will be manifested by dehydration, hyperglycemia, and glycosuria without acetonuria. Because it will take time for his pancreas to adjust insulin production to accommodate Tim's sudden enormous intake of calories, he will be given supplementary insulin injections on a temporary basis. When he no longer requires supernormal levels of carbohydrates and calories, they will be gradually diminished to give his pancreas time to adjust to his reduced need for insulin -- a luxury of time not possible when his caloric intake was being increased very suddenly.

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 3: Responses to Burns - Major Organ Systems
Attachment b: Case Study 6

Phil Barnes finally managed to puncture a badly scarred vein in his arm with the needle attached to an eyedropper. He injected the heroin and lay back on his mattress to feel the initial blast from his fix as he watched the candle burning on the floor next to the mattress. Soon his eyes closed. Sometime later he became chilled and pulled his old blanket over him without noticing that its corner lay in the flame of the nearly burned-out candle. When the fire department arrived, Phil was pulled from his burning room in the cheap hotel and taken to the Burn Care Center of the large medical center near by. He had suffered extensive burn wounds but was alert and demanding to be released from the hospital. Attempts to reassure him only increased his frantic efforts to leave the hospital. Finally, it was necessary to have him declared a ward of the court in order to force him to submit to the care that would save his life.

PHIL BARNES
Age: 33 yr.
Weight: 132 lbs.
Heroin addict
Burn wounds: 48$ mixed full and deep partial thickness

Directions: Complete Learning Activities 1 and 2 and answer these questions.

1. How might psychologic disorders complicate Phil's recovery?
2. What effect could poorly managed fluid resuscitation have on Phil's central nervous system?
3. What neuroendocrine responses can be expected in the presence of Phil's major burn trauma that will directly affect his renal function?
4. When would oliguria be considered a normal response by Phil's kidneys to the stress of his injury?
5. Is it possible for Phil to have a normal urine output in the presence of renal dysfunction? Why?
6. What could be the cause of the dark, reddish brown urine Phil is excreting? Why?
7. How should successful titration of intravenous fluids affect urinary output when sequestered body fluids flood back into Phil's circulation?
8. How might splanchnic vasoconstriction be responsible for invasive infection in Phil's vulnerable tissues?
9. How can Phil be protected from the development of Curling's ulcer?
10. How can Phil be protected from complications arising from an adynamic or paralytic ileus?

Unit IX Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 3: Responses to Burns - Major Organ Systems
Case Study 6 Answers and Discussion

1. How might psychologic disorders complicate Phil's recovery?

Phil's addiction to heroin was not diffecult to detect by his health care team when he was admitted to the burn care center. His veins were badly scarred and sclerosed from multiple injections and infections. His desperate attempt to get out of the hospital without regard to the critical nature of his burns provided stark evidence of his fear of being without the drug upon which he had long since become dependent. Although it was an accident, his burn trauma was the indirect result of his drug addiction. The health care team will undertake his detoxification and withdrawal from heroin during his extended period of care, but the underlying psychological problems that led to his addiction will require much more lengthy intervention.

Meanwhile, his care must proceed under the most difficult circumstances. Phil's health care team must cope with all the frustrations and conflicts that arise when an unwilling patient is forced to permit them to save his life. In Phil's case, the chances are exceedingly strong that he will return to the environment that brought him to his present illness. This time, he will carry with him the visible and invisible scars of his burn trauma, which will even further weaken his fragile ego.

2. What effect could poorly managed fluid resuscitation have on Phil's central nervous system? Why?

Phil could develop cerebral dysfunction ranging from disorientation and confusion to convulsion and stupor if his rapidly developing hypovolemia is not overcome very quickly with intravenous fluids that will effectively expand his plasma volume and maintain adequate perfusion of his brain cells with oxygen and nutrients. However, short-term central nervous system dysfunction from the effects of burn trauma hypovolemia can be totally reversed without organic sequelae if intravenous therapy becomes adequate. On the other hand, poorly managed fluid resuscitation with excessive infusions of hypotonic fluids can lead to reduced extracellular osmolality in the brain, which can produce water intoxication and death of cerebral tissue.

3. What neuroendocrine responses can be expected in the presence of Phil's major burn trauma that will directly affect his renal function?

Phil's burn trauma will create a rapid decrease in vascular plasma volume that will trigger the release of the antidiuretic hormone (ADH). The ADH will act directly on his renal glomeruli to produce maximum resorption of water as his body struggles to maintain sufficient intravascular volume to support tissue perfusion and aerobic cell metabolism. As part of Phil's neuroendocrine response to the stress of his burn trauma, aldosterone will be released from the adrenal cortex to stimulate maximum resorption of sodium by his renal tubules to maintain the tonicity of his circulating fluids. In the presence of his massive loss of plasma volume into his interstitium and burn wounds, Phil will excrete only enough urine to carry away a normal load of solutes. Only with adequate reexpansion of his vascular space will his renal system be able to return to a normal level of function.

4. When would oliguria be considered a normal response by Phil's kidneys to the stress of his injury?

Oliguria in the presence of ADH, aldosterone, and reduced cardiac output is a normal response by Phil's kidneys to the stress of his burn trauma. In the absence of adequate intravenous replacement of his circulating volume, the onset of oliguria would be very rapid. His output could drop to 15 ml/hour or less with markedly increased urea concentration and decreased sodium concentration. However, adequate vascular expansion will produce a very rapid return of normal urine volume and concentration as long as his renal system has not suffered damange and is functioning normally.

5. Is it possible for Phil to have a normal urine output in the presence of renal dysfunction? Why?

Phil can have a normal urine output in the presence of renal dysfunction. In reality, the "normal" output may mask the fact that urine output is not keeping pace with the amount of intravenous fluids being infused. If Phil suffers this complication, he is at risk of a hypervolemic state that will trigger congestive heart failure and pulmonary edema as fluids from his overloaded vascular compartment are forced into his interstitium.

6. What could be the cause of the dark, reddish brown urine Phil is excreting? Why?

Phil's burn wounds are extensive and many of them are deep, full-thickness injuries. Such mutilation of tissue can be expected to produce massive destruction in Phil's red blood cells and muscle tissue. As a result, both red blood cells and muscle cells have ruptured and dumped their loads of hemoglobin and myoglobin into Phil's general circulation. These free globins have circulated to the kidneys where the tubules are attempting to excrete them. It will be vitally important to use osmotic diuretics along with sufficient intravenous fluids to keep these globins washed out of Phil's renal tubules. If they are permitted to plug the tubules, acute necrosis will develop, with death of renal tissue.

7. How should successful titration of intravenous fluids affect urinary output when sequestered body fluids flood back into Phil's circulation?

In the presence of normal kidney function and adequate fluid resuscitation, the body fluids that have been sequestered in Phil's interstitial tissues will return to his general circulation through healed capillary walls and be excreted. The important point to remember here is that this massive influx of fluid to be excreted should NOT create an increase in Phil's urine output. Rather, his intraveous infusions will be sharply reduced to keep pace with the infusion of fluid from his interstitium so that his urine output remains normal. The absence of diuresis at this time is a hallmark of excellent fluid management in burn trauma.

8. How might aplanchnic vasoconstriction be responsible for invasive infection in Phil's vulnerable tissues?

As with his other systems, the response of Phil's gastrointestinal system is a massive neuroendocrine-stimulated vasoconstriction of aplanchnic tissues Since his burn trauma is major, his stress response may persist to the point where splanchnic vasoconstriction will create ischemia and capillary

8. (cont'd)

death in distal portions of intestinal villi. As necrotic tissue sloughs from the villi, ulcerations will permit the migration of intestinal microorganisms into the general circulation and on to burn wound and other tissues that provide mediums for rapid colonization. Thus the splanchnic vasoconstriction could be responsible for invasive infection seriously complicating Phil's recovery.

9. How can Phil be protected from the development of Curling's ulcer?

Gastroduodenal ulceration, or Curling's ulcer, could develop as part of Phil's stress response to his severe burn trauma. However, research in the prevention of this complication has shown that if an antacid is instilled into the stomach on admission and at regular intervals thereafter to maintain gastric pH at 7.0 gastroduodenal ulceration does not occur.

10. How can Phil be protected from complications arising from an adynamic or paralytic ileus?

Phil's neuroendocrine response to his major burn trauma will tend to bring his gastrointestinal peristalsis to a standstill as his body directs all energies to coping with the physiologic effects of his injuries. During this period the ileus will be adynamic, or nonfunctioning. Therefore, the gastrointestinal tract above it may become distended and produce vomiting and the threat of aspiration. Until peristalsis returns, Phil's stomach will be kept decompressed by low-pressure suction through a gastrointestinal tube placed on admission.

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds

Competency: Describe major objectives in management of wounds of burn trauma.

Performance Objectives:

1. List the three major objectives for the management of burn trauma wounds.
2. Describe two approaches for meeting cellular hyper-metabolism following major burn trauma.
3. Compare advantages and disadvantages of the most commonly used topical antimicrobial agents used in
4. Identify techniques used for removal of necrotic tissue from burn wounds.
5. List the advantages and disadvantages of open, closed, and semi-closed techniques for burn wound care.
6. Enumerate measures that can be taken to promote comfort and pain relief in the management of burn wounds.

Evaluation: Answer 20 objective items on management of burn wounds.

Learning Activities:

______ 1. View filmstrip Management of Burn Trauma Wounds.

______ 2. Read Feller and Archambeault, Nursing the Burned Patient, pp. 115-149, 26-31.

______ 3. Review Handout: "Dressing Materials for Burn Care Today"

______ 4. Complete Vocabulary List and sumbit.

______ 5. Prepare and submit Case Study 7 or 8.

______ 6. Attend class and discuss Case Studies.

Enrichment Activities:

______ 1. Visit a burn-care unit to observe approaches in the management of burn trauma wounds.

______ 2. Investigate the cost of treating a major burn trauma.

______ 3. Talk to burn-care unit personnel about the management of burn wounds as practiced in their facility.

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds
Attachment a: Case Study 7

Peter Olsen was a baker in the old country and now, with the help of his wife and two grown sons, he operates his own successful bakery near his home in a small Minnesota community. Peter prepares all the ingredients for his fruit-filled confections himself. To preserve their flavor and texture, he steams them very briefly in the large wall-mounted steamer before placing them in the pastry. Before dawn this morning, as Peter was preparing his fruit for the day's baking, he opened the steamer without realizing that he had forgotten to turn the steam valve off. His entire upper body was bathed in live steam through the thin undershirt he wore to stay cool in the fruit steaming room. Peter was rushed to the local community hospital that had developed an effective burn treatment program in consultation with a major burn care center some distance away. There his fluid resuscitation was successfully completed and his health-care team had begun his wound management within an hour of admission by bathing him in a whirlpool tub and removing all loose eschar.

PETER OLSEN
Age: 62 yrs.
Weight: 95 kg
Height: 170 cm
Heavy smoker with advanced emphysema
Burn wounds: 45% mixed deep partial-and full thickness, with 30% deep partial-thickness.

Directions: Complete Learning Activities1 & 2 and answer these questions. Be prepared to discuss this case in class.

1. Would mafenide acetate (Sulfamylon) be the antimicrobial of choice to use on Peter's burn wounds? Why?

2. What would be the advantages of using silver sulfadazine (Silvadene) on Peter's burn wounds? What disadvantages?

3. Would 0.5% silver nitrate solution be an effective topical agent to use for destroying infectious organisms that may invade Peter's burn wounds?

4. What other antimicrobial agents might be considered for Peter's burn wound care? What problems might present?

5. Discuss the use of parenteral antibiotic solutions in Peter's care.

6. Why is it important to rid Peter's burn wounds of necrotic tissue as rapidly as possible?

7. What problem may complicate the use of wet-to-dry dressings for removal of eschar?

8. What techniques may be used to remove the eschar from Peter's burn wounds?

9. Discuss the open, closed and semi-closed techniques that might be considered for dressing Peter's burn wounds.

10. Should isolation techniques be used in the management of Peter's burn wounds? Why?

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UnitIX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds
Case Study 7 Answers and Discussion

1. Would mafenide acetate (Sulfamylon) be the topical antimicrobial of choice to ouse on Peter's burn wounds? Why?

   Mafenide acetate is an extremely effective bactericidal agent and would deliver therapeutic concentrations through Peter's eschar to viable tissues underneath. However, with his history of a lifetime of heavy smoking and advanced emphysema, mafenide acetate could create a problem because it produces a mild, metabolic acidosis through carbonic anhydrase inhibition with blocking of the renal buffering system. Without an efficient pulmonary system to compensate for the reduced ability of his kidneys to correct the metabolic acidosis, Peter could be at risk of a steadily increasing acidotic state. In addition, since most of Peter's burn wounds are deep partial-thickness, with pain receptors intact and hypersensitive, the burning pain produced by mafenide acetate for about 45 minutes after application could cause him unnecesary suffering. Lastly, the firm, strongly adherent eschar produced by mafenide acetate could delay its removal and subsequent healing of Peter's wounds.

2. What would be the advantages of using silver sulfadiazine (Silvadene) on Peter's burn wounds? What disadvantages?

   Like mafenide acetate, silver sulfadiazine is an extremely effective bactericidal agent and would deliver therapeutic concentrations through Peter's eschar to viable tissues underneath. In contrast, however, silver sulfadiazine is comparatively free of systemic complications and causes no pain upon application. It is soothing to burn wounds and produces a soft, pliant eschar that tends to be more easily removed. Compared to some topical antimicrobial agents, silver sulfadiazine is costly. However, its singular effectiveness, systemic safety, and comfort of application make it the topical bactericidal agent of choice in most burn wound management.

3. Would a 0.5% silver nitrate solution be an effective topical agent to use for destroying infectious organisms that may invade Peter's burn wounds?

   Silver nitrate in a 0.5% solution is an excellent topical agent for destroying surface bacteria when used as continuous wet soaks. However, because it is ineffective against organisms lying deeper than 1-2mm in the eschar, the problem of invasive autoinfection could not be controlled. Moreover, this silver nitrate solution is hypotonic and carries with it the ion-binding potential of the silver ion; therefore, its extensive and prolonged use can create a state of hyponatremia and hypochloremia that could present problems for Peter. In addition, since all dressings containing silver nitrate must be kept wet at all times to prevent tissue injury from silver nitrate residue, Peter could be at risk of excessive body heat loss and discomfort as well. Wet dressings also may inhibit ambulation, which will be an early and vital part of Peter's care. Finally, silver nitrate leaves black stains on every surface it touches. Peter's wounds, his normal skin, bedclothes, dressings, and-last but not least-the skin and clothing of everyone who cares for him would be stained black.

4. What other antimicrobial agents might be considered for Peter's burn wound care? What problems may present?

There are other agents that are effective but present problems that would make them unacceptable for Peter's burn wound management. For example, ointment containing neomycin sulfate and polymixin B sulfate (Neosporin) has been reported to cause deafness in some patients, while gentamicin sulfate (Garamycin) can be nephrotoxic and cause vestibular ototoxicity. On the other hands, povidone iodine (Betadine) gel has no such side effects although it becomes liquid at body temperature, making it difficult to keep on burn wounds. Recently, povidone iodine has been supplied as a foam which tends to adhere very well to burn wounds and is used very effectively when applied for 3 consecutive days in preparation for grafting.

5. Discuss the use of parenteral antibiotic solutions in Peter's care.

In addition to a topical bactericidal agent. Peter's physician may prescribe a high prophylactic dose of a parenteral antibiotic early in his postburn period to combat endogenous bacteria before they can invade and proliferate in his burn wounds. Parenteral antibiotics given after invasive wound infection occurs will be far less effective since circulation in Peter's partial-thickness wounds is severely compromised and is virtually nonexistent in his full-thickness wounds.

An outdated technique once used for wound infection was subeschar clysis in which antibiotic solutions were delivered to infected subeschar tissues through multiple needle injections. However, in the presence of meticulous cleansing of wound and normal skin surfaces with continuous applications of antimicrobial cream, the need for direct invasion of subeschar tissues with antibiotics has become unnecessary.

6. Why is it important to rid Peter's burn wounds of necrotic tissue as rapidly as possible?

The longer Peter's wounds contain necrotic tissue, the greater the risk of invasive infection. Yet, every effort made to control invasive infection will delay sloughing of burn eschar. The body's natural response to dead tissue is to permit bacterial invasion to destroy tissue protein and seperate it from living tissue. However, if the body's natural response was permitted to continue uninhibited, invasive infection would be a certainty in Peter's extensive burn wounds. Therefore, he will continue to receive care that will prevent bacterial invasion while his eschar is removed by mechanical means as quickly as possible.

7. What problem may complicate the use of wet-to-dry dressings for removal of eschar?

Although wet-to-dry dressing techniques may be quite effective in removing bits of necrotic tissue from Peter's burn wounds, the problem of bacterial colonization during the procedure places him at risk of wound infection because his wounds would not be protected with antimicrobial cream during the procedure. On a repreated basis, the time can mount to many hours of exposure to bacterial invasion. Therefore, wet-to-dry dressings will be avoided in Peter's burn wound management.

8. What techniques may be used to remove the eschar from Peter's burn wounds?

Peter's daily whirlpool bath will loosen and remove some necrotic tissue from his wounds. The daily cleansing of his wounds with providone iodine solution and a soft cloth will further remove necrotic tissue. The full thickness burns will require tangential excision about the fifth or sixth day postburn, when his platelet count has returned to normal and there is no danger of excessive bleeding. Surgical excision of Peter's eschar will be repeated regularly until most full-thickness eschar is cleaned from his wound beds. Other techniques that could be considered include the application of a proteolytic enzyme preparation that would digest and dissolve eschar or perhaps primary excision early in his care, in which the entire eschar is removed from his full-thickness wounds and replaced by autografts or biologic dressings.

9. Discuss the open, closed, and semiclosed techniques that might be considered for dressing Peter's burn wounds.

The open or exposed approach involves the application of an antimicrobial agent without dressings of any kind. Although the open wound is readily observable, there can be a problem if wounds are circumferential or when the patient is amulatory. Creams will rub off on bedding and clothing, a situation that is not only uncomfortable but also reduces the effectiveness of infection control. The closed dressing technique should be avoided entirely since the wound is obscured under many layers of dressings for 2-5 days at a time, creating an ideal medium for bacterial growth. Semiclosed dressings, in which gauze buttered with an antimicrobial cream is applied to the burn wound and then held in place with a single layer of fine-mesh gauze, have the advantage of providing maximum contact between wounds and the cream. In addition, Peter would be able to dress and be fully ambulatory while his wounds were being afforded maximum protection against invasive infection.

10. Whould isolation techniques be used in the management of Peter's burn wounds? Why?

Isolation techniques are not necessary if Peter's burn wounds and normal skin are kept meticulously clean, for example, with daily hypochlorite bathing, providone iodine cleansing, and continuous application of silver sulfadiazine to burn wounds between cleansings. As long as those who care for him practice good hand-washing technique before touching Peter or his things, he can be cared for in an open unit with other patients, without fear of invasive infection.

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds
Attachment b: Case Study 8

Sally Wagner has worked as a short-order cook in the coffee shop of a large metropolitan hotel for almost 6 years. She was left to raise her four small children when their father died in a steel mill accident over 10 years ago. Sally prides herself on her speed in getting orders out and wastes little time observing the rules of safety her boss tries in vain to impose upon her. Just an hour after her shift started this evening, Sally was hurrying to change her deep-fat fryer without help. Suddenly, the container full of boiling vegetable oil slipped from her grasp, fell to the counter and spilled its contents over her arms, hands, abdomen, thighs, legs, and feet. Her scream of pain brought her manager and fellow workers to her aid, but they did nothing until the temperature of the oil had cooled enough to touch Sally. By that time she had suffered extensive burns. Her fluid resuscitation was well managed in the hospital, and her health-care team concentrated their efforts on the management of her burn wounds.

SALLY WAGNER
Age: 36 years
Weight: 50 kg
Height: 173 cm
Burn wounds: 40% mixed full and deep partial-thickness with 30% full-thickness

Directions: Complete Learning Activities 1 & 2 and answer these questions. Be prepared to discuss this case in class.

1. What will be the three major objectives in the management of Sally's burn wounds? Why?

2. How will Sally's burn wounds affect her metabolic rate? Why?

3. What problems might complicate Sally's need for nutrition to meet her hypermetabolic needs? Why?

4. If supplementary insulin is prescribed by Sally's physician to accomodate the sudden inflation of her calorie intake, what problem might present? Why?

5. What are the major sources of infection that could place Sally at risk of invasive burn wound infection? Why?

6. How will Sally's health-care team monitor her wounds for microorganism colonization? Why?

7. What are the two most effective techniques that can be used to prevent invasive infection of Sally's burn wounds? Why?

8. What are the advantages of using plastic tub liners and a hypochlorite solution for Sally's daily whirlpool bath?

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds
Case Study 8 Answers and Discussion

1. What will be the three major objectives in the management of Sally's burn wounds? Why?

   The three major objectives in the management of Sally's burn wounds will be adequate nutrition, prevention of invasive infection, and removal of necrotic tissue. 1) She will require adequate nutrition to maintain an anabolic state and to provide raw materials for the regeneration of her burned skin. 2) Sally must be protected from invasive infection of her burn wounds, which provide an excellent medium for bacterial proliferation. 3) To prepare her wounds for healing or grafting, they must be freed of all necrotic tissue that will inhibit tissue regeneration or perfusion of grafted tissue.

2. How will Sally's burn wounds affect her metabolic rate? Why?

   Sally's burns are mostly full-thickness and will correlate directly with metabolic responses to her burn trauma that will be immediate and dramatic. Her burn trauma will trigger the elevation of catecholamine and steroid levels, which will increase the metabolic rate. The loss of body heat through her wounds will also be greatly exaggerated. This combination of demands on her energy resources will produce a hypermetabolic rate that will be compounded by the ongoing metabolic demands of her wounds as they heal. Sally's height and weight indicate that she has little substrate to support her hypermetabolic rate. To avoid a major energy crisis and to provide adequate nutrition for tissue regeneration and healing, she must receive prompt and continuing nutritional support.

3. What problems might complicate Sally's need for nutrition to meet her hypermetabolic needs? Why?

   Appetite usually is very poor among burn trauma patients. Sally may have difficulty consuming enough food to equal 5688 calories each day. Therefore, her physician may prescribe oral hyperalimentation using a commercially prepared or hospital-prepared formula that will provide high concentrations of nutrients in a small quantity of liquid. If necessary, Sally will receive her hyperalimentation formula by continuous drip through a nasogastric tube, or if her metabolic needs cannot be met orally, she may require intravenous hyperalimentation. It is important to remember that hyperalimentation will not reverse a catabolic state, but it will overwhelm the negative nitrogen balance that will be associated with Sally's burn trauma. Her physician will prescribe free essential amino acids for intravenous hyperalimentation rather than burden her liver with the need to metabolize polypeptides that form 50% of some commercially prepared protein hydrolysate hyperalimentation solutions.

4. If supplementary insulin is prescribed by Sally's physician to accomodate the sudden inflation of her calorie intake, what problems might present? Why?

   Until Sally's pancreas has time to adjust insulin production to accomodate the sudden, enormous increase in calorie intake, her physician may prescribe supplementary insulin. Sally's urine will be tested regularly for excess glucose. If she shows either a negative or 2% or higher reading, serum glucose should be tested because, in the presence of supplementary insulin, a negative urine glucose could reflect a dangerously low serum glucose. On the other hand, a urine glucose of 2% or higher could reflect a dangerously high serum glucose. Since the urine is much slower to show changes in glucose levels than the serum, Sally should be monitored very closely while she is receiving supplementary insulin.

   A second problem could present when Sally no longer requires a high calorie intake. To avoid a reaction to excessive levels of insulin in the presence of a reduced intake of calories. Sally's caloric intake should be reduced gradually to give her pancreas time to adjust to normal demands for insulin production.

5. What is the major source of infection that could place Sally at risk of invasive burn wound infection? Why?

   The major source of potential infection of Sally's wounds is her own intestinal tract. Wound contamination from her intestinal bacteria could occur in two ways: First, the stress reaction to burn trauma produces capillary vasoconstriction in intestinal villi. If the vasoconstriction persists at all, ulceration and sloughing of the lumenal walls of villi will permit migration of intestinal microorganisms into Sally's general circulation and into her burn eschar. In the warm, plasma-soaked necrotic tissue of her burn wounds, the bacteria will find rich breeding grounds for colonization. It will be 12-18 hours before the lumenal cells of her intestine can regenerate sufficiently to halt bacterial migration. Meanwhile Sally is at great risk of invasive infection.

   Second, when bacteria are transferred by Sally or by those caring for her from her perineum to her wounds, the dangers of wound infection could be very high since bacteria multiply logarithmically and reach numbers capable of invasive infection with great speed.

6. How will Sally's health-care team monitor her wounds for microorganism colonization? Why?

   The health-care team will use biopsies of Sally's eschar to detect signs of wound colonization by bacteria. For the first 4 or 5 days after her burn, there will be little evidence of surface bacteria since the burning process itself destroys all microorganisms. In addition, autocontamination from migrating intestinal bacteria will occur at subeschar levels not reached by surface culture techniques. Therefore, Sally's eschar will be biopsied regularly to obtain subeschar material for culture.

7. What are the two most effective techniques that can be used to prevent invasive infection of Sally's burn wounds? Why?

Although half of all deaths following burn trauma are due to invasive infection, some burn care centers have succeeded in developing techniques that have virtually eliminated problems related to wound infection and systemic sepsis. Their documented control of invasive infection problems is due to superb burn wound management that emphasizes: first, daily cleansing of burned and unburned skin surfaces with antiseptic solutions, and second, the continuous application of a topical antimicrobial agent on all wound surfaces.

In the first instance, Sally would be bathed each day in a plastic-lined whirlpool tub filled with a hypochlorite solution in a ratio of 1:300 parts of water. Then her wounds would be gently but thoroughly cleansed with a soft cloth and povidone iodine (Betadine) solution. All her burned surfaces would then be covered by gauze generously impregnated with silver sulfadiazine cream and covered with a single layer of gauze topping. The remarkable effectiveness of these techniques in preventing invasive infection of burn wounds is Sally's best guarantee that she will not face the threat of invasive wound infection that could greatly increase the length of her recovery and expense of health care.

8. What are the advantages of using plastic tub liners and a hypochlorite solution for Sally's daily whirlpool bath?

Plastic tub liners should be used in the tub where Sally receives her daily whirlpool bath, to reduce the chances for contamination of wounds from bacteria that inevitably cling to tub surfaces from prior patients. The minimal cost of the liners pays an extremely valuable dividend in terms of the protection they provide against wound infection. The hypochlorite is yet another inexpensive precaution to take in protecting burn wounds from invasive infection. They hypochlorite solution will destroy bacteria on contact and coagulate surface proteins for ease of removal as well.

If the expense of ordinary household Clorox or similar product is considered too much, then the extremely inexpensive hypochlorite solutions used in swimming pools can be used with equal effectiveness. The important point to remember is that the cost of tub liners, hypochlorite solutions, or even the relatively expensive antimicrobial creams are minimal when compared to daily medical and hospital charges. If Sally can be assured of protection against the catastrophe of invasive wound infection and the cost of its treatment, then antiseptic solution, tub liners, and antimicrobial cream are indispensible. Infection control is too critical to be the target of economic compromises.

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds

QUIZ

COMPLETE THESE STATEMENTS

1. The three major objectives for successful management of major burn trauma wounds are:

   1. ____
   2. ____
   3. ____

2. The normal caloric expenditure for an adult averages __________ calories per square meter of skin surface per day. In major burn trauma the minimum caloric requirement is _________ calories per square meter of skin surface per day.

3. The major source of organisms that infect burn wounds is the _____________ ____________________________.

4. The key techniques for achieving successful control of invasive burn wound infection are:

   1. ____
   2. ____

5. ____________________ is a surgical procedure performed to release circumferential eschar that threatens to constrict circulation distal to a burned area or to produce difficult ventilation.

6. Biological dressings harvested from humans are known as ____________________, while those harvested from cows or pigs are known as ________________________.

CIRCLE "T" FOR A TRUE STATEMENT AND "F" FOR A FALSE STATEMENT

7. T F Burn wounds are masses of dead and dying tissue requiring the same attention and care reserved for any necrotic wound.

8. T F If a victim of major burn trauma is given exactly the number of calories computed to meet his daily metabolic need, he will present with a negative nitrogen balance.

9. T F Capillary vasoconstriction produced in response to the stress of major burn trauma may result in ulceration of intestinal villi with migration of intestinal bacteria to burn wounds to produce invasive infection.

10. T F Although half of all burn deaths occur from infection, in some burn care centers wound infection and systemic infection are documented to be virtually non-existant.

11. T F Bacterial invasion is the body's normal response to the presence of dead tissue.

12. T F Efforts to control invasive infection will also hasten sloughing of burn eschar.

MATCH THE FOLLOWING TOPICAL AGENTS WITH THEIR DESCRIPTIONS

13. a. Sulfamylon
    b. Silvadene
    c. Silver nitrate
    d. Neosporin
    e. Garamycin
    f. Betadine foam

______ Newly developed replacement for the gel form; adheres well to wound surfaces.

______ Excellent for destroying surface bacteria; may produce severe electrolyte imbalance; stains all surfaces it touches.

______ Extremely effective for destroying surface and deep eschar bacteria; causes burning pain on application; produces strongly adherent eschar; produces mild metabolic acidosis.

______ Effective antimicrobial, nephrotoxic; can cause vestibular ototoxicity.

______ Extremely effective for destroying surface and deep exchar bacteria; soothing and painless on application; produces soft, pliant eschar; may cause leukopenia with extensive, prolonged use.

______ Effective antimicrobial; reported to have caused deafness in some patients.

MATCH THE FOLLOWING BURN WOUND TECHNIQUES WITH THEIR DESCRIPTIONS

14. a. Open
    b. Closed
    c. Semi-closed

______ Produces ideal medium for bacterial growth.

______ May produce significant insensible water loss with protential electrolyte imbalance.

______ Permits maximum body movement and ambulation with the patient fully clothed.

______ Invasive infection almost inevitable.

______ Difficult to keep creams or solution in contact with all injured surfaces.

______ Permits passage of wound exudate without loss of antimicrobial cream to clothing or bedding.

______ Permits direct observation of burn wounds at all times.

CIRCLE THE LETTER(S) BEFORE CORRECT ANSWERS

15. To avoid a major energy crisis following major burn trauma, the patient must receive prompt and continuing nutritional support to produce:

    a. anabolic metabolism
    b. catabolic metabolism
    c. negative nitrogen balance
    d. positive nitrogen balance

16. In the presence of supplementary insulin, given to help metabolize a gross increase in caloric intake, a negative urine glucose could reflect:

    a. a dangerously high serum glucose
    b. a normal serum glucose
    c. a dangerously low serum glucose
    d. none of these

17. The major source of organisms that infect burn wounds is:

    a. contaminated debriding instruments
    b. street clothing worn by nurses and physicians
    c. the patient's intestinal tract
    d. airborne bacteria from other patients
    e. all of these

18. Burn wound debridement may be accomplished by:

    a. compressed air bubbles moving across the burn wound
    b. daily whirlpool tubbing with dissection of loose tissue
    c. proteolytic enzyme dressings
    d. tangential excision of eschar
    e. primary excision of entire eschar
    f. all of these

19. Isolation techniques are unnecessary in the care of burn trauma patients if:

    a. visitors are not permitted to touch the patient.
    b. the patient's burned and unburned skin is kept scrupulously clean.
    c. sterile sheets and gowns are used.
    d. the health care team covers street clothes with clean gowns.
    e. the health care team washes hands thoroughly with soap and water before touching the patient or his accoutrements.

20. If the burn trauma patient presents with hepatic dysfunction, his intravenous hyperalimentation solutions should be:

    a. high in polypeptides
    b. free, essential amino acids
    c. both of these
    d. neither of these

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds

KEY TO QUIZ

1. 1. adequate nutrition for tissue regeneration
   2. prevention of invasive infection
   3. removal of necrotic tissue from wound surfaces

2. 50
   100

3. patient's own intestinal tract

4. daily cleansing of burned and unburned skin with antiseptic solutions
   and
   frequent application of a topical antimicrobial agent

5. Escharotomy

6. homografts
   heterografts

7. True

8. True

9. True

10. True

11. True

12. False

13. f, c, a, e, b, d

14. b, a, c, b, a, c, a

15. a and d

16. c

17. c

18. f

19. b, d, e

20. b

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 4: Management of Burn Wounds
Vocabulary List

1. eschar:

2. escharotomy

3. granulation tissue:

4. homograft:

5. heterograft:

6. autograft:

7. split-thickness graft:

8. full-thickness graft:

9. pedicle flap:

10. keloid:

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 5: Burn Wound Healing

Competency: Describe the interrelatedness of functional loss and the healing process in burn trauma.

Performance Objectives:

1. List the causes of burn wound contracture deformities.
2. Describe the effect of healing on adjacent structures.
3. Identify the three approaches to prevention of contraction deformities.
4. Explain the process of burn wound closure in the absence of epithelium.
5. Rank the priorities for grafting following major burn wound trauma.
6. Compare types of autografts and their uses.
7. Describe the care of donor and recipient sites following autografting.
8. Explain techniques for minimizing hypertrophy of scar tissue.

Evaluation: Answer 20 objective items on burn wound healing with 75% accuracy.

Learning Activities:

______ 1. View filmstrip, Functional Management and Burn Wound Closure.

______ 2. Read Phipps, Long and Woods, pp. 1521-1522, or Feller and Archambeault, Nursing the Burned Patient, pp. 142-155.

______ 3. Prepare and submit Case Study 9 or 10.

______ 4. Attend class and discuss Case Studies.

Enrichment Activities:

______ 1. Visit physical therapy/occupational therapy units to observe management of contracture deformities.

______ 2. Talk to physical/occupational therapists about their experiences in working with persons with major burn trauma.

______ 3. Read Wooldridge, Maribeth and Judith Surveyer, "Skin Grafting for Full-Thickness Burn Injury", AJN, Vol. 80, No. 11 (November, 1980) pp. 2000-2004.

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 5: Burn Wound Healing

QUIZ

COMPLETE THESE STATEMENTS

1. Patients tend to assume a ______________________________, abducted position of comfort with burn wounds over flexor surfaces of the body.

2. Patients with neck burns should rest in bed with ______________ pillows for head support.

3. The best defense against contraction deformities of the Achilles tendon in burn wounds of the foot or ankle is __________________________.

4. In the absence of infection, ____ burns heal rapidly and spontaneously without grafting.

5. Pressure sensors function soon after a deep, partial-thickness burn wound closes, but ________________________ and ______________________________ sensors may take months or years to recover fully.

6. Unused graft tissue will remain viable for about ______________________________ ______________________________ if refrigerated in a solution of saline and antibiotics.

7. Hypertrophied scar tissue can be flattened, smoothed and minimized by the use of ________________________________ ______________________________ worn 24 hours a day until all grafts or scar tissue have fully matured.

CIRCLE "T" FOR A TRUE STATEMENT AND "F" FOR A FALSE STATEMENT

8. T F Contraction of healing tissues is a normal response by the body.

9. T F The elbow joint should be kept flexed at 45 degrees when burns cover the flexor surface.

10. T F The hand with full-thickness dorsal burns should be wrapped over a gauze roll in the "position of function" to protect the extensor tendons.

11. T F Autografts are successful because harvested skin will live for short periods without blood supply.

12. T F Split-thickness grafts should not be harvested from the scalp for grafting to visible, non-hairy areas of the body.

13. T F Nylon netting is an excellent means to secure newly grafted skin to permit maximum patient mobility, free wound drainage and close observation of the grafted area.

CIRCLE THE LETTER(S) BEFORE CORRECT ANSWERS

14. If contracted burn wound scar tissue is permitted to mature, correction of deformities can be accomplished through:

    a. skeletal traction
    b. daily stretching exercise
    c. excision of scar tissue with grafting

15. Patients with posterior knee burns should sit in a chair with the knee:

    a. flexed at 90 degrees
    b. flexed at 30 degrees
    c. fully extended
    d. very slightly flexed

16. As nearly as possible, all body joints should actively or passively complete a full range-of-motion at least once a day beginning:

    a. within 24 hours postburn
    b. after 48 hours postburn
    c. 3 days postburn
    d. 9 days postburn

17. When not enough uninjured skin is available for autografting, the physician will apply:

    a. split-thickness sheet grafts
    b. full-thickness pedical grafts
    c. split-thickness mesh grafts
    d. full-thickness sheet grafts
    e. split-thickness postage stamp grafts

18. Rank in order the priorities for burn wound grafting.

    a. For appearance
    b. For survival
    c. For function

19. Ambulation after leg grafting should be delayed for:

    a. 24 hours
    b. 72 hours
    c. 5 to 6 days
    d. 7 to 14 days

20. Grafted hands should be kept absolutely immobile with splinting or skeletal traction for:

    a. 24 hours postgrafting
    b. 72 hours postgrafting
    c. 5 to 7 days postgrafting
    d. 9 to 15 days postgrafting

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 5: Burn Wound Healing

KEY TO QUIZ

1. flexed
2. no
3. ambulation
4. partial-thickness
5. temperature and pain
6. one week
7. pressure garments
8. True
9. False
10. False
11. True
12. False
13. True
14. c
15. c
16. a
17. c and e
18. b, c, a
19. c
20. c

Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 5: Burn Wound Healing
Attachment a: Case Study 9

Tina Shaefer is an honor student and in her junior year at college. In celebration of the end of finals week, Tina, her roommate, and their boyfriends decided to spend the weekend with some classmates at a lodge in the mountains. The road near the lodge is narrow and steep with little room for two vehicles to pass. When a rapidly moving sports car approached from the opposite direction, Tina's boyfriend lost control of his car, which overturned and burst into flames. Her roommate and the two young men were able to drag themselves out of the burning car but Tina's leg was badly fractured and she could not move until the driver of the sports car ran back and pulled her free. Using his CB radio, the sports car driver summoned help, and Tina was transported by ambulance to the nearest hospital, from which she was quickly transferred by helicopter to a burn care center.

TINA SHAEFER
Age: 20 yr.
Weight: 55 kg
Height: 168 cm
Burn Wounds: 83% mixed full - and deep partial-thickness
Unburned areas: Both feet, posterior head, buttocks, and perineum

Directions: Complete Learning Activities 1 and 2 and answer these questions. Be prepared to discuss this case in class.

1. What should be the priorities for grafting Tina's burn wounds? Why?
2. Where can grafts harvested from Tina's scalp be used? Why?
3. How often can Tina's unburned skin be harvested for grafting her burn wounds?
4. What kinds of grafts may be harvested from Tina's unburned skin?
5. What kind of graft could best be used to make the most efficient use of Tina's available skin? Why?
6. What techniques could best be used to secure Tina's grafts? Why?
7. What measures should be taken to eliminate subgraft exudate from Tina's wounds? Why?
8. When should Tina ambulate after grafts are applied to her legs? Why?
9. Is early mobility to prevent joint and tendon deteriorization advisable after grafts have been applied to Tina's hands? Why?
10. If Tina's wounds are well managed, will she suffer problems with hyper trophied scar tissue? If so, what can be done?

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Unit IX: Problems Related to Inpaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 5: Burn Wound Healing
Case Study 9 Answers and Discussion

1. What should be the priorities for grafting Tina's burn wounds? Why?

   Tina's burns are very extensive and life-threatening, even in the presence of her advantages of youth and excellent health before the accident. Although the overall goal for her grafting program will be total autogenous covering of her wounds as early as possible, what little normal skin she has remaining must be used 1) to help her survive, 2) to maintain her body function, and 3) to restore her appearance. It may seem insensitive not to consider her badly burned face as a top priority area for grafting but her survival must come first. With massive skin loss, Tina is at risk of all the potentially lethal consequences of her burn trauma. Her body no longer is protected by intact skin surface from heat loss, evaporation of body fluids, and invasive infection. Then, since her hands have suffered full-thickness burns, they must receive priority for grafting as well. It would be a hollow victory indeed if Tina survived her burns only to face a lifetime with hands or other joints that could not function as a result of complications arising from delayed grafting. Once her survival is reasonably assured and the function of major body areas has been secured by grafting. Tina's appearance will become a priority for autogenous grafting.

2. Where can grafts harvested from Tina's scalp be used? Why?

   Graft tissue harvested from Tina's scalp can be used anywhere on her body, including her face, as long as they are thin, split-thickness grafts that do not contain hair follicles. No hair will grow from the graft, and her scalp will continue to grow hair to cover the scars of harvesting. As Tina has so little normal skin surface remaining, her scalp will be used repeatedly as a donor sight for harvesting thin, split-thickness tissue.

3. How often can Tina's unburned skin be harvested for grafting her burn wounds?

   With excellent care, Tina's donor sites will heal in about 2 weeks and regenerate enough epithelium to be harvested again in 3-4 weeks, depending upon the thickness of the graft taken. The same sites can be harvested as many times as it requires to cover all of Tina's full-thickness wounds. Finally, her scalp, feet and buttocks will heal for the final time, and Tina's skin surface will have become whole. All donor sites will be scarred from harvesting, but with adequate care, she will suffer no contraction deformities and her hair will cover donor sites on her scalp.

4. What kinds of grafts may be harvested from Tina's unburned skin?

   Basically, there are two kinds of grafts, depending upon the depth of tissue harvested: the split-thickness graft and the full-thickness graft. Split-thickness grafts leave epithelial cells for regeneration of more skin at the donor site. Full-thickness grafts leave no tissue for regeneration of skin, and the donor site itself must be covered by grafted tissue to heal properly. As there is so little normal skin surface from which to harvest, only split-thickness tissue will be taken from Tina's donor sites so that every millimeter of normal skin will be available for repeated harvesting until her body is covered once again.

5. What kind of graft could best be used to make the most efficient use of Tina's available skin? Why?

Although sheet grafting would produce the least scarring, Tina's available skin will be harvested and then run through a meshing dermatome that will make multiple slits permitting relatively small sheets of skin to be stretched over burn wounds one and a half to nine times their size. Epithelialization will spread from the edges of the mesh graft to fill in wound spaces between them. Sheet or postage-stampsized grafts will be used to cover Tina's hand wounds and the surfaces of joints where scarring and shrinkage of tissue is least desirable. Finally, sheet grafts will be used to cover her face wounds to produce the best possible cosmetic results.

6. What techniques could best be used to secure Tina's grafts? Why?

Tina's sheet, mesh, or postage-stamp grafts could be simply laid on her granulating wound surfaces or they could be held in place with special tape, sutures, clips or nylon netting secured at the edges with a collodian type solution. It is important that her grafts be clearly visible at all times so that the earliest signs of trouble may be observed in time for them to be corrected. Since Tina will be ambulatory very early in her care, despite the extensiveness of her wounds, it will be important to use one of the techniques described to secure her grafted tissues to protect them and to permit maximum mobility as well.

7. What measures should be taken to eliminate subgraft exudate from Tina's wounds? Why?

Collections of exudate may form under Tina's grafted tissue as a normal response of her wounds to the graft. However, pockets of exudate prevent the graft from adhering to the granulated surface of the wound and thus block perfusion of the grafted tissue. To protect the viability of the graft, collections of exudate should be aspirated with a needle and syringe, or allowed to seep through a tiny slit made in the graft with a knife, or, if the exudate is very near the edge of the graft, it can be rolled out with a cotton-tipped applicator. This last technique should be used very sparingly since the mechanical action of forcing exudate to move under the graft toward its periphery will tend to tear away fragile new capillaries and fibers beginning to anchor the graft to the wound.

8. When should Tina ambulate after grafts are applied to her legs? Why?

Although Tina may ambulate very early after grafting of her upper body, she should remain at bed rest for 5-6 days after leg grafting. Her arterial flow will require more time to become established between leg graft and wound surfaces when venous circulation. If Tina ambulates too soon, gravity could distend venules, causing venous stasis and death of the graft tissue before adequate vascular drainage is established. In addition, the action of her muscles beneath the graft tissue could create a shearing effect that would dislodge grafts before they are securely adhered to wound beds. After 5 or 6 days, Tina may be up and about with elastic bandages wrapped in a figure eight the length of her grafted legs. To assure the development of adequate circulation in her grafted legs, Tina will wear elastic bandages or hose at all times she is up and about until her grafts have completely healed and matured and all redness has faded from them.

9. Is early mobility to prevent joint and tendon deterioration advisable after grafts have been applied to Tina's hands? Why?

No. Early joint movement is desirable in every part of Tina's body except her grafted hands. Unless her grafted hands are kept absolutely immobile with splinting or skeletal traction for 5-7 days after grafting, there is a very good chance that the grafts will be lost. Therefore, Tina's hands will be totally immobilized for this period of time until grafts have adhered firmly to her hand wounds. Then she will resume range of motion movements to maintain joint and tendon integrity.

10. If Tina's wounds are well managed, will she suffer problems with hypertrophied scar tissue? If so, what can be done?

Some of Tina's grafted wounds and all of her partial-thickness wounds that heal spontaneously will produce scar tissue that will hypertrophy to some extent. The rapid proliferation of collagen and fibroblasts below epithelial tissue will create a build-up of elevated, reddened, itchy, and hypersensitive surfaces that will remain for about 4-6 months and then gradually atrophy until the redness fades about a year or so later.

This scar tissue can be flattened, smoothed, and minimized if Tina wears custom-made pressure garments 24 hours a day for a year or more until all scar tissue has fully matured. Tina's pressure garments should be fitted and worn as soon as her wounds have resurfaced and grafts have become firmly adherent.

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 5: Burn Wound Healing
Attachment b: Case Study 10

Craig Maxwell has worked as a teamster, loading and unloading cargo from ships, for most of his adult life. Except for some bumps and bruises and a bilateral herniorrhaphy 15 years ago, Craig has enjoyed robust good health and works harder than many men half his age. He was directing the loading of cargo early this morning when a cargo net slipped the crane hook and let a dozen large containers of caustic chemical solution drop to the platform just above where Craig was standing. Three of the containers burst open, showering him with the caustic solution before he could scramble to safety. His fellow workers tried to wash the solution off with buckets of sea water, but by the time Craig arrived at the hospital, he had suffered extensive burn trauma with full-thickness wounds extending to muscle depth in some areas.

CRAIG MAXWELL
Age: 50 yr.
Weight: 92 kg
Height: 190 cm
Burn wounds: 62% mixed full - and partial-thickness with 10% deep full-thickness to muscle level.

Directions: Complete Learning Activities 1 & 2 and answer these questions. Be prepared to discuss this case in class.

1. What normal healing mechanism could place Craig at risk of contraction deformities?
2. What forces can be applied to overcome the tendency of Craig's wounds to contract?
3. What precautions should be taken to prevent contraction deformities in Craig's extensive neck burn wounds?
4. Why will Craig's elbow joints require special attention to prevent contraction deformities?
5. What precautions should be taken to maintain the range of motion in Craig's knee with posterior knee burn wounds?
6. What is the best defense against contraction of Craig's Achilles tendons from his deep posterior ankle burns?
7. How can contraction deformities of the dorsum of Craig's hands be prevented?
8. Why should the so-called "position of function" be avoided in the care of Craig's hand burns?
9. What precautions should be taken in exercising Craig's burned hands? Why?
10. What post-grafting problem is unique to burned children that Craig will have to face?

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 5: Burn Wound Healing
Case Study 10 Answers and Discussion

1. What normal healing mechanism could place Craig at risk of contraction deformities?

   As burn wounds heal, new tissue tends to contract, pulling the edges of the wound together. In partial-thickness burns, this problem can be severe since tissue regeneration is very rapid. As Craig's wounds begin to heal, fibroblast cells, containing microfilaments that behave like smooth muscle, will tend to migrate from the viable edges, pulling them toward the centers of the wounds. Permitted to continue uninhibited, this constant pull of healing tissues could produce contraction deformities in Craig's skin surfaces.

2. What forces can be applied to overcome the tendency of Craig's wounds to contract?

   Four forces can be used to overcome the tendency of Craig's healing wounds to contract. Beginning about the third week postburn, positioning and pressure molds can be used to maintain a steady counter-pull against healing wounds. Skeletal traction may be prescribed by his physician early in his care to preserve tendon length in his hands. Finally, regular rang-of-motion exercises will tend to stretch healing tissues to overcome the tendency to contract.

3. What precautions should be taken to prevent contraction deformities in Craig's extensive neck burn wounds?

   No pillows will be used by Craig to support his head while he is at bed rest, and he will be encouraged to maintain positions that favor slightly exaggerated extension of his neck to counteract the pulling force of healing neck tissues. Then, beginning the third week, he will wear an isoprene pressure mold around his neck to maintain a steady pull against healing tissues while he is up and about during the day. He will ear the neck pressure mold throughout his hospitalization and for a year or more after discharge until all neck tissues have matured, faded, and no longer exert a pulling force.

4. Why will Craig's elbow joints require special attention to prevent contraction deformities?

   As is true of all patients who have suffered extensive burn wounds, Craig will tend to assume a position of comfort to minimize the pain sensations created by his burns. This position of comfort is one of flexion, in which all joints tend to be flexed at all times to avoid any stretching of burned tissue that could produce a volley of pain. However, flexion of all but his hand joints should be avoided at all cost. To permit a joint such as the elbow to remain flexed will promote tissue contraction as the wounds on the anterior surface of his elbow heal. Craig's elbow joints should be kept fully extended, with the aid of splints, if necessary, to preserve vital joint function. In addition, he will be assisted with daily exercises that will promote his elbow function and discourage tissue contraction.

5. What precautions should be taken to maintain Craig's knee range of motion in the presence of severe posterior knee burns?

As with his elbow joints, Craig's knee function must be preserved so that he does not lose any range of motion of this vital joint. While he is at bed rest, his knees will be kept extended with only slight flexion to prevent undue popliteal pressure. While he is up and about during the day, he will avoid sitting in a chair with his knees flexed. Rather, he will rest his legs on another chair or stool of equal height to his chair to keep his knee joints as fully extended as possible. Except when he must remain at bed rest following leg grafting. Craig will walk as much as possible to maintain the mobility of his knees. In addition, he will exercise regularly during and after his daily whirlpool bath. Each of these measures will serve to exert an opposing force to the tendency of his posterior knee wounds to contract.

6. What is the best defense against contraction of Craig's Achilles tendons from his deep posterior ankle burns?

The best possible defense against potential contraction of Craig's Achilles tendons underlying his severe ankle wounds is ambultion. The regular and frequent act of walking about will provide an excellent force to counteract the pull that could place these vital tendons at risk of shortening. Of course, since Craig will be ambulated very early in his care to promote the return of all physiologic functions, the counterforce necessary to preserve his Achilles tendons will be an added benefit. At night, when Craig is at bed rest, his feet will be maintained at 90° to his legs with a pillow or footboard, to continue the counter-pulling force to protect his tendons.

7. How can contraction deformities of the dorsum of Craig's hands be prevented?

It will require meticulous attention to Craig's extensor tendons and the healing tissue over them to prevent contraction deformities of his hands. The postburn edema that may form in his hands will tend to force his hand into a hyperextended position. If not corrected immediately and consistently, Craig could lose the function of his metacarpophalangeal joints when the extensor tendons rupture, creating boutonniere deformities. Therefore, Craig's extensor tendons will be kept fully lengthened by keeping his fingers straight and at a 90° angle to his hand. This same positioning of his hands will be maintained by traction of pressure-mold splinting after each grafting to provide a counter-pulling force while the grafted skin becomes firmly adhered to underlying granulation tissue.

8. Why should the so-called "position of function" be avoided in the care of Craig's hand burns?

If Craig's hands are simply positioned over a roll of gauze and wrapped to maintain the so-called "position of function," his extensor tendons can be lost because they will not be maintained at their fullest length during the healing period. Contracting tissues and the early effects of wound edema make it mandatory to protect Craig's extensor tendons by maintaining them in a fully extended position at all times other than when his hands are being exercised.

9. What precautions should be taken in exercising Craig's hands? Why?

Although positioning, pressure molds, and skeletal traction can all provide excellent counter-pulling forces to prevent contraction deformities in Craig's hands, it is equally important to maintain the mobility of his joints if he is to regain maximum function of his hands. However, great care must be taken when range-of-motion exercises are used to preserve his hand joint movements. Neither fingers nor wrists should be fully flexed until the full-thickness wounds of the dorsum of his hands have been grafted and are well healed. Otherwise, flexion exercises will be allowed only if full extension is present and consistent.

10. What post-grafting problem that is unique to burned children will Craig not have to face?

Because children are still growing and their bones often grow more rapidly than their scar tissue after burn wound healing is complete, they can develop contraction deformities. This unequal growth rate often requires that children have their scars excised and grafted at regular intervals until their growth is complete and full function of all of their joints is assured. As an adult, Craig will experience no further bone growth. Therefore, except for elective cosmetic ocrrections that he may desire, his grafts and scar tissue will create no functional problems if, during the management of his burn wounds, the full range of motion in all joints and the protection of tendons has been maintained.

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Student Competency Sheet

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 6: Psychosocial Problems in Burn Trauma

Competency: Describe effects of major burn trauma as sudden, catastrophic assault on the existence of a human being.

Performance Objectives:

1. Identify psychologic responses to the effects of major burn trauma, as they relate to victims and families perceptions and behavior.
2. Describe the effects of sensory overload and sensory deprivation on burn victims.
3. Discuss regressive behavior and the tendency of health care team to accentuate it in burn trauma care.
4. Discuss the stages of mourning as they apply to burn victim, family and health care team during adaptation to burn trauma.
5. Describe the impact of loss of physical abilities on the burn victim's ability to adjust to social expectations.
6. Explain techniques for assessment and intervention to enhance adaptation and psychosocial survival of the burn victim.

Evaluation: Answer 20 objective items on psychosocial problems in burn trauma with 75% accuracy.

Learning Activities:

_______ 1. View filmstrip Psychosocial Survival in Burn Trauma.

_______ 2. Read Phipps, Long and Woods, pp. 1522-1524, or Feller and Archambeault, Nursing the Burned Patient, pp. 309-318.

_______ 3. Prepare and submit Case Study 11 or 12.

_______ 4. Attend class and discuss case studies.

Enrichment Activities:

_______ 1. Read Bowden, Marjorie and Feller, Irving, "Family Reaction to a Severe Burn," AJN, Vol. 73, No. 2 (February, 1973), pp. 317-319.

_______ 2. Read Chaney, Patricia, ed., "Burns: Breaking the Anger-Despair Cycle," Nursing '75, Vol. 5, (May, 1975, pp. 45-49.

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 6: Psychosocial Problems in Burn Trauma
Attachment a: Case Study 11

Jason Potter has been blind since birth but has earned the respect and admiration of his colleagues and students as a brilliant mathematician and teacher in a privately endowed college dedicated to the education of intellectually gifted children. Jason's wife and three children have prepared a family barbecue to celebrate his birthday, and everyone is gathered in the Potters' backyard with relatives and friends, ready to enjoy the afternoon. Jason's 10-year-old son is anxious to be helpful during the preparations, so he searches the garage for something to start the charcoal burning for the steaks. Deciding that a can of gasoline would do fine, he returns to the backyard and pours it over the charcoal. With his father standing very near to the barbecue unit, the boy throws a lighted match into the gasoline-soaked charcoal. A massive burst of flames explodes against Jason's clothing, which catches fire. By the time the flames are extinguished, Jason has suffered severe burn trauma and is taken to the large metropolitan hospital nearby.

JASON POTTER
Age: 35 yr; blind since birth
Weight: 75 kg
Burn wounds: 58% mixed partial - and full thickness

Directions: Complete learning Activities 1 & 2 and answer these questions. Be prepared to discuss this case in class.

1. What immediate sensations might promote fear and anxiety for Jason when he is received in the emergency department of the hospital.
2. What immediate psychological buffers might serve to protect Jason's mind against recognition of his critical condition?
3. What fear will be most prominent in Jason's mind during his care in the emergency department? Why?
4. What effect might the intensity of his initial care have on his ability to cope with his situation?
5. How important is psychological support during Jason's emergency care? Why?
6. What effect could sensory overload have on Jason's responses? Why?
7. Under what conditions could Jason suffer the effects of sensory deprivation?
8. How can Jason's health care team manage the problems of sensory overload and sensory deprivation during his care?
9. What effect will feelings of grief have on Jason's behavior? Why?
10. What family problem may develop as the result of Jason's burn injuries?

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Module A: Management of the Person With Burns
Lesson 6: Psychosocial Problems in Burn Trauma
Case Study 11 Answers and Discussion

1. What immediate sensations might promote fear and anxiety for Jason when he is received in the emergency department of the hospital?

   Jason has been rushed to the hospital with major burn trauma and will be cared for very rapidly by his emergency-care team to increase his chances for survival. But Jason is blind. Every voice he hears will be new to him. He cannot see the people that bustle about him or the life-support systems that are being used to begin his resuscitation. All sounds are strange and the necessary comments and observations by those caring for him will promote anxiety by distorting his perception of reality. Without familiar sounds and sensory stimulation, Jason's stress response to his burn trauma can be significantly increased by anxiety and fear of the unknown.

2. What immediate psychologic buffers might serve to protect Jason's mind against recognition of his critical condition?

   For a short while after the moment of Jason's burn trauma, he may experience a transient amnesia and disorientation that will buffer his mind against the reality of the devastating effects of his injury. Because he is unable to see his wounds, he will have only the sensation of pain from his partial-thickness burns and the odor of burned flesh and clothing to tell him that something is very wrong. Recognition may not come until after he is well into his emergency care, when the full impact of his situation begins to flood his perception.

3. What fear will be most prominent in Jason's mind during his care in the emergency department?

   Jason's greatest fear will be one common to every major burn victim. As awareness of the seriousness of his injuries comes into focus, he will fear that he is dying. His sensitivity to the urgency with which the emergency-care team is conducting his care will compound that fear. Jason will require repeated assurance that he is being cared for, that things are going well, and that he is not dying. However, if Jason's burn trauma does hold the possibility of death during his emergency care, his wife should be told as quickly as possible in a completely honest and compassionate manner.

4. How important is psychological support during Jason's emergency care? Why?

   Psychological support is very important at all times for Jason. During his emergency care, however, his physiological survival must take top priority over his or his family's need for reassurance. It will be very for his emergency-care team to stop and explain each action and then wait for Jason's comprehension before implementing it. Every attempt will be made to provide calm, frequent, and reassuring verbal contact with Jason during his emergency care as long as such attention to his need for assurance does not interfere with the team's coordinated efforts to deal rapidly and effectively with life-threatening problems triggered by his burn trauma.

5. What effect could sensory overload have on Jason's responses? Why?

There will be very few moments during which Jason's body is not being invaded or handled during his first 48 hours of care. These critical hours constitute the period when his physiological parameters must be continuously monitored and managed if he is to suffer the fewest complications. The constant bombardment of stimuli, however, will provide him with no rest and will tend to reduce him to a state of total helplessness.

The combined effects of continuous stimulation and Jason's inability to visualize the source of the stimuli will tend to perpetuate his anxiety and to make rest very difficult. His greatest problem will be the loss of REM sleep so vital to his recovery. Loss of REM sleep during these first 48 hours postburn must be dealt with very rapidly and effectively, or the intense, unrelenting pace to prevent life-threatening complications will create yet one more complication, exhaustion.

6. Under what conditions could Jason suffer the effects of sensory deprivation?

In the presence of sensory overload, Jason will suffer the paradox of sensory deprivation; that is, he will be deprived of all the sensory stimulation familiar to him. He will hear no familiar voices or the sounds of home and school so familiar to him. He will not feel the touch of his own clothing or his bed, only the cream and dressings on his wounds. He will not smell the familiar odors of his wife's cooking, or his garden flowers, or the books in his library, only the odors of the hospital. When he is able to doze off for a few minutes he will awaken to completely strange sensations that are made all the more frightening in the absence of familiar sensations and stimuli.

7. How can Jason's health-care team manage the problems of sensory overload and sensory deprivation during his care?

Jason's health care team must remember at all times that although he cannot see, he is acutely aware of sensations brought to him through touch, sound, and smell. His feelings of helplessness in the presence of the onslaught of strange and sometimes painful stimuli can be minimized if those who care for him make it a point to speak to him always before they touch him. They also should explain what they are about to do in clear, easy-to-understand language.

Jason will remain oriented to space and time if his team mentions the time of day to him at frequent intervals and comments on the presence of others in the unit or the fact that his wife is expected at a given time, etc. Most important, Jason can be provided with positive stimulation if his health-care team members sit down and talk to him while holding his hand or touching his arm, to let him know that they are there and that they care, very much, about his feelings and his need for human contact during his hospitalization.

8. What effect will feelings of grief have on Jason's behavior? Why?

Jason has suffered a catastrophic injury and is faced with a long and complicated period of recovery, during which he must depend upon strangers to meet his every need. This is a terrifying state and can deal a critical blow to his self-image. It will not be unusual for Jason to grieve or mourn his loss of self in ways very similar to the grief brought on by the loss of a loved one. He may first deny that his injuries are as serious as his physician describes them or that they will require extensive care. Anger at this predicament may overtake his denial and then be followed by a profound sense of depression when the full reality of his situation is perceived. If he is able, with the support of his family and his health-care team, to work through his period of mourning, he will finally come to the stage of acceptance in which he accepts the reality of his burn trauma and begins to look to the future and recovery.

9. What family problem may develop as the result of Jason's burn injuries?

Remember that it was Jason's 10-year-old son who produced the source of his father's injuries. Recognition of his role in causing pain and unhappiness to Jason could create persistent feelings of guilt that could be very difficult to resolve if they are not recognized and dealt with very promptly. The youngster will require very stron support from his mother and his father if he is to survive the impact of his involvement in Jason's injuries. This will create yet another burden that Jason must bear, but it will be vital to his son to have his father's understanding and compassion as quickly and as frequently demonstrated as possible.

Burn trauma is always a family injury. There are few times in family life when mutual understanding and support are more critically important. The psychological survival of the burn victim depends upon family support, and family survival very often depends on the ability of the victim to cope effectively with his injuries and to relieve his family of burdens of real or imagined guilt.

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 6: Psychosocial Problems in Burn Trauma
Attachment b: Case Study 12

Louise Mathews is the wife of a successful and very prominent businessman who gives his wife everything her heart desires--except his time. Louise spends her days doing the one thing that works best to relieve her boredom and lack of purpose and self-esteem; she drinks. Louise is an alcoholic. Her husband is vaguely aware that Louise drinks more than is good for her, but since she functions fairly well and does not embarass him before his business associates, he does little to intervene in her problem. He has more pressing matters on his mind.

During one of her husband's frequent out-of-town business trips, Louise is staggering about in her kitchen attempting to find the bottle of vodka she has hidden somewhere. She reaches across the stove to an overhead cupboard, dragging the sleeve of her negligee across a burner that she had forgotten to turn off after heating some water for tea she never drank. Within seconds, Louise is engulfed in flames. Hearing her screams, the maid runs to her rescue, throwing water on Louise and then calling for an ambulance.

LOUISE MATHEWS
Age: 42 yrs.; alcoholic for 5 yr.
Weight: 65 kg.
Burn wounds: 61% mixed partial - and full thickness

Directions: Complete Learning Activities 1 & 2 and answer these questions. Be prepared to discuss this case in class.

1. What immediate complication might present during Louise's early postburn care?

2. How should Louise's health-care team respond to her aberrant behavior?

3. Would it help Louise if her health-care team minimized her injuries and reassured her that she looks fine, even if she doesn't?

4. What overt gestures would serve to assure Louise that her injuries do not make her hideous or repulsive?

5. How can Louise's health-care team best help her to accept the reality of her wounds?

6. How can Louise's husband be helped to overcome his profound feelings of guilt for ignoring the problem that led to her burn trauma?

7. How can Louise be prepared for her return to the outside world?

8. What outside source of help could be of great assistance to Louise during her rehabilitation?

9. What technique can be used to help both Louise and her husband to anticipate and cope with problems they will face after her discharge?

10. When will Louise outlive the effects of her burn trauma?

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Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 6: Psychosocial Problems in Burn Trauma
Case Study 12: Answers and Discussion

1. What immediate complication might present during Louise's early postburn care?

   Louise suffers from alcoholism, but the chances that her health-care team will find out about her problem from Louise or her husband are very remote since niether of them recognizes it. Therefore, the first evidence of her disease will be withdrawal symptoms, which may be masked by her physiological response to burn trauma. Only when Louise fails to respond normally, even in the presence of well-managed resuscitation, will her health-care team suspect a preexisting problem that must be dealt with.

2. How should Louise's health-care team respond to her aberrant behavior?

   Louise's aberrant behavior should be unconditionally accepted unless actual harm might be done to her physiological of psychological survival. Whether caused by her alcoholism, physiological responses to her burn trauma, or deep-seated psychological problems, Louise's behavior must be accepted calmly and without judgement of any kind if she is to begin to develop a trusting relationship with those who will care for her during her recovery.

3. Would it help Louise if her health-care team minimized her injuries and reassured her that she looks fine, even if she doesn't?

   The fact that Louise has suffered feelings os rejection for a very long while before she suffered her burn injury may tempt her health-care team to try to reassure her that her burn wounds are not all that bad-that she looks just fine. But such well-meaning deception would simply compound her feelings of rejection because she knows that she does not look fine and that her burns are not pleasant to look at. Moreover, attempts to deceive Louise about the reality of her appearance will undermine her trust in her health-care team. They are lying and she knows it. So how can she trust them to be truthful with her about anything? Her questions should be answered with complete honesty at all times. She should be permitted to discuss her appearance and her feelings about her wounds as often as she wishes. Her health-care team should listen attentively but avoid comments that would imply pity that would create even greater feelings of unworthiness in Louise.

4. What overt gestures would serve to assure Louise that her injuries do not make her hideous or repulsive?

   Louise's health-care team should make it a point to touch her wounds, her dressings, or her scars, even when her care does not require it. These and other human contacts by health-care team members while visiting with Louise or discussing topics not related to her injuries will tend to assure her that her injuries do not make her hideous or repulsive, that it is LOUISE that matters, not the appearance or presence of her wounds or scars.

5. How can Louise's health-care team best help her to accept the reality of her wounds?

Louise can best be helped to accept the reality of her wounds by assistance to her in working with and dwelling on what she has left. If she can experience early successes, however small, in using her remaining abilities, she will learn to cope with the losses she has suffered with much greater effectiveness. In addition, if Louise is permitted to become involved in making as many decisions as possible about her care, she will gain a sense of control over her situation that will help her to overcome feelings of helplessness in the face of her extensive injuries.

6. How can Louise's husband be helped to overcome his profound sense of guilt for failing to recognize the problem that led to her burn trauma?

One of the most effective means of helping her husband to overcome his guilt feelings is to provide him every opportunity 1) to be involved in her care while she is recovering in the hospital, and 2) to help her plan for her rehabilitation in the outside world. Louise will need a great deal of understanding and support to help her cope with her alcoholism and her healing burn wounds and scarred appearance for a very long while. The person best equipped to provide this kind of support is her husband. By helping Louise with adjustment to both her problems, her husband can serve a vital and very necessary role that will, in time, overshadow the destructive effects of his guilt feelings.

7. How can Louise be prepared for her return to the outside world?

Because Louise must cope with two major problems upon her release from the hospital-her scars and healing wounds and her alcoholism-her preparation for the return to the outside world must begin far in advance of her discharge. Although she may come to feel comfortable wihtin the hospital milieu, where the staff is extremely supportive, all her old doubts, anxieties and fears will resurface when she must face people outside the hospital who have yet to see her.

It would be very helpful if a representative from Alcoholics Anonymous could visit with her several times before her discharge and be present from time to time during her first few days at home to help her avoid behavior that could lead to a drinking binge. In addition, it would be helpful if Louise could meet with friends and acquaintances before her discharge so that she would have the strong support of her health-care team during these first crucial encounters.

8. What outside source of help could be of great assistance to Louise during her rehabilitation?

One of the most effective sources of help to Louise during her adjustment to the outside world will be other victims of burn trauma who have coped successfully with their injuries and have returned to meaningful, productive lives. Their example and encouragement could make a critical difference in whether Louise adjusts well to her burn trauma and its residual effects.

9. What technique can be used to help both Louise and her husband to anticipate and cope with problems they will face after her discharge?

An excellent means to help Louise and her husband to anticipate problems on the outside is to play the "What would I do if ..." game. For example, Louise could ask herself, "What would I do if someone is shocked by my scarred face?" OR, "What will I do when my friends learn that I am an alcoholic?" With guidance, both Louise and her husband can prepare themselves for the eventualities they fear the most at her discharge. By discussing them frankly and planning for the appropriate ways to behave, the threat inherent in such situations will be greatly weakened and will permit Louise and her husband to gain advanced control of anticipated problems.

10. When will Louise outlive the effects of her burn trauma?

NEVER! Louise has suffered a profound insult to her self-image, which was fragile before she was burned. She will spend the rest of her life coping with and adjusting to her disabilities and disfigurement. Although it is impossible to predict if she will be successful always, it is possible to say that the kind of care and support she receives during her hospitalization could make a crucial difference in her rate of psychosocial survival from burn trauma.

Wor-Wic Tech Community College Nursing Programs

Nur. 202

Unit IX: Problems Related to Impaired Protective Mechanisms
Module A: Management of the Person With Burns
Lesson 6: Psychosocial Problems in Burn Trauma

QUIZ

COMPLETE THESE STATEMENTS

1. The patient's most prominent fear following major burn trauma is that he will ______________________.

2. Physiologic ______________________ must take priority over psychologic support during the first hours following major burn trauma.

3. Sensory overload during major burn trauma care very often blocks ____________ sleep and can lead very rapidly to exhaustion.

4. The process of infantilization during early care in major burn trauma may encourage the development ______________________ behavior by the patient.

5. ______________________ is a particularly strong coping mechanism used by parents who feel real or imagined responsibility for their children's burn trauma.

6. As many decisions as possible about the patient's care and daily activities while hospitalized should be made by the ______________________ to encourage the return of independent behavior.

7. The key buffer between the patient and the questions, stares and looks of shock or pity from the outside world will be ______________________.

CIRCLE "T" FOR TRUE STATEMENTS AND "F" FOR FALSE STATEMENTS.

8. T F Transient amnesia and disorientation both serve as psychologic buffers to protect the mind from the devastating reality of catastrophic trauma.

9. T F Sensory overload is nearly inevitable during the first 24 hours post-burn when the patient is rarely left untouched or uninvaded.

10. T F Aberrant behavior in an otherwise normal victim of major burn trauma should be unconditionally accepted unless actual physiologic or psychologic harm will result to him.

11. T F Team members should support worried and anxious family members by assuring them that there is nothing they need do--that everything is being taken care of.

12. T F The burn trauma health care team can be expected to grieve for their patients' loss of self-image and their disfigurements.

13. T F Psychosocial survival from major burn trauma can be expecially difficult for black people whose injuries have destroyed their pigment, producing cells leaving them with bodies that are permanently part black and part white.

CIRCLE THE LETTER(S) BEFORE CORRECT ANSWERS

14. Within minutes of major burn trauma, the victim is forced into a state of:

    a. severe depression
    b. extreme anxiety
    c. helpless dependence on others
    d. anger and hostility

15. Sensory overload is very often paradoxically compounded in burn trauma by:

    a. hypersensitivity to stimuli
    b. profound depression
    c. sensory deprivation
    d. emotional deprivation

16. Distortions of perception may be produced in major burn trauma by:

    a. electrolyte and acid-base imbalance
    b. cerebral water intoxication
    c. hypoxia
    d. invasive wound infection
    e. all of these

17. The patient's ability to cope with the effects of major burn trauma may be seriously inhibited by preexisting encephalopathies caused by:

    a. alcohol addiction
    b. drug addiction
    c. paranoia
    d. cerebral sclerosis
    e. schizophrenia

18. Major burn trauma patients may mourn their loss of self-image through:

    a. denial
    b. anger
    c. euphoria
    d. depression

19. If the patient's death is a possibility, that fact should be:

    a. kept from the worried family as long as possible
    b. denied until the patient actually does die
    c. presented immediately and with great compassion to the family
    d. left to the family's clergyman to reveal to them or not

20. The patient's acceptance of burn trauma disfigurement can be enhanced if the health care team will:

a. reassure him that he looks "just fine
b. touch him and his wounds when his care does not require it
c. dwell on what he has left rather than on what he has lost
d. minimize the full reality of his disfigurement

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KEY TO QUIZ

1. die
2. survival
3. REM
4. regression
5. Denial
6. patient
7. his family
8. True
9. True
10. True
11. False
12. True
13. True
14. b and c
15. c
16. e
17. a, b, d
18. a, b, d
19. c
20. b and c